

**Directorate of Information
Management Facility (DOIM)
Ft McCoy, Wisconsin**

**CERTIFIED FINAL RFP SUBMITTAL
SPECIFICATIONS**

Submitted To:

United State Army Corps of Engineers, Louisville District



Project Number: 72008

P2 Number: 330131

Solicitation Number: W912QR-10-R-0060

July 2010

Prepared By: CH2M HILL



PRICE BREAKOUT SHEET

Solicitation W912QR-10-R-0060

Price Break-Out for the Design and Construction of the DOIM Facility at Ft McCoy, WI

Contractor: _____

Line Item	Bid Item	Description	Bid Acceptance Period After Notice to Proceed (Calendar Days)	Lump Sum Amount
0001	Base Item	DOIM Facility		
0002	Base Item	Site Work		
0003	Base Item	Project Design Fees		
		TOTAL BASE BID		
0004	Option 1	Diesel Generator	Award within 90 days of NTP	
0005	Option 2	Landscaping	Award within 90 days of NTP	
0006	Option 3	Concrete Parking Lot and Access Roads	Award with base bid	
OMAR FUNDED OPTIONS				
0007	Option 4	CFCI OMAR Funded Items	Award with base bid	
0008	Option 5	CFCI "Bona Fide Need" OMAR	Awarded within 180 days of NTP	
		TOTAL OF BASE BID AND ALL OPTIONS		

Notes:

Description of Base + Option Proposal Items

- (a) Item No. 0001 "DOIM Facility" includes all construction work required within a line 5 feet outside of the facility.
- (b) Item No. 0002 "Site Work" includes site demolition and construction work required beyond a line 5 feet outside the DOIM building including construction of utility services and associated fees, site grading & drainage, stormwater management, surface restoration, pavement, curbs, gutters, sidewalks, equipment pads and enclosures.
- (d) Item No. 0003 "Project Design Fees" includes the Fees from the Offerors' design professional to complete the Base proposal design and construction documents for the project to include but not limited to all applicable permitting, survey work and fees. This line item shall also include all costs associated with preparing the Comprehensive Interior Design (CID) for the base bid as outlined in the specifications.
- (e) Item No. 0004 "Provide Diesel Generator" includes purchasing and installing an emergency back-up generator as identified in the drawings and specifications. Generator shall be sized according to loads included in this RFP. The minimum size anticipated is 400KW. Upgrading to a NG generator may be included as a betterment at no additional cost to the government. Include size and type of generator in the proposal.
- (f) Item No. 0005 "Provide Additional Landscaping" includes adding landscaping as identified on the drawings.
- (g) Item No. 0006 "Provide Concrete Access Road and Parking lots" includes additional cost of providing concrete access road and parking lots in lieu of asphalt.
- (h) Item No. 0007 "Provide OMAR items" includes purchasing and installing shelving in the storage room.
- (i) Item No. 0008 "Provide Bona-Fide Need OMAR items" includes purchasing exterior ash trays, break room refrigerators and microwaves, and window blinds.

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SPECIAL CONTRACT REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES (NOT USED)

1.2 SUBMITTALS—SEE SECTION 01 33 00, SUBMITTAL PROCEDURES

1.3 COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK

19 October 2007

1.3.1 Commencement, Prosecution, and Completion of Work (Apr 1984) FAR 52.211-10

The Contractor shall be required to

- a. commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed,
- b. prosecute the work diligently, and
- c. complete the entire work ready for use not later than 490 days from NTP. The time stated for completion shall include final cleanup of the premises.

1.3.2 Additional Requirements/Clarifications of Work Included Within the Contract

- a. The time stated in paragraph 1.3.1 for completion shall include installation of Government-furnished furniture as well as as-built drawings, O&M manuals, operational tests/reports/training/instructions, equipment lists.
- b. Those areas of the building designated to receive Government-furnished furniture must be made available for Government installation to begin no less than 30 days prior to the expected contract completion date. Government-furnished IT/Telecom equipment will also be installed during this time period.

1.3.3 Requirements for Completion of Designated Areas Prior to Furniture Installation

The appropriate or designated exterior roads, parking areas, walks, and building entrances shall be sufficiently complete to support the delivery of furniture products by semi-tractor trailers. All interior building finishes of areas designated to receive furniture, including all furniture entries, pathways, staging, and storage areas shall be complete, as well as supporting electrical and telephone/data utilities. All IT spaces shall also be complete. Completed building finishes shall include all flooring materials and base, interior walls, ceilings, lighting, HVAC systems and controls, doors, doorframes, and trim. All designated areas are to be cleaned, vacuumed, waxed and buffed as appropriate for the installation of furniture and occupancy by the customer. The HVAC system must be in operation, fully balanced and commissioned. If appropriate or designated, the elevator(s) shall be operable and certified for use by the approving agency prior to the delivery of the furniture package. In the appropriate or designated areas, the pre-final building punch inspections shall be performed and punch list items corrected by the Contractor prior to the delivery of the furniture package. After furniture and IT installation by the Government, the Contractor shall perform a complete final cleaning

to include a final VCT floor buffing in all impacted areas. Final Inspection and Acceptance may occur only after all furniture and IT installation by the Government is complete.

The following provisions shall also apply:

The Contractor is responsible for furnishing utilities during furniture and IT installation and until the facility is turned over to the Government.

The Contractor is responsible for access to the building, and security and ownership during the furniture and IT installation.

Facility operation and maintenance during the furniture and IT installation is the responsibility of the Contractor.

The Contractor shall be responsible for coordination of the work with the furniture and IT vendor(s).

The Contractor shall be responsible for the electrical hookup of the power feed(s) and phone/data wiring and jacks to all powered modular systems furniture.

The Government shall be installing IT equipment during the furniture installation period. The Contractor shall be responsible for coordination with its subcontractors as necessary to accommodate the furniture and IT equipment installation.

1.4 NATIVE FILES FOR PROPOSAL DEVELOPMENT ON DESIGN/BUILD PROJECT

Included, in addition to the drawings that are part of the solicitation, are Native CADD files in one and only one format that contain limited preliminary notional design concepts and site characteristics that were created during the solicitation development process and are not necessarily all inclusive. They are not reference materials and are not incorporated into the solicitation directly or by reference. The files are provided only for the convenience of the Contractor in his preparation of a proposal. The material is given "as is" and no explanation or clarifications will be made with regard to these materials. The Government makes no representations as to the content of the files, their completeness or their accuracy. The solicitation governs in any conflict between these files and the solicitation requirements. The Government does not represent these materials as indicating any preferences with regard to the RFP requirements, nor does it represent that the files show design or technical approaches that will meet the RFP requirements. In addition, the Government affirmatively states that it does not warrant the accuracy of files, including any site conditions represented in these materials. The offeror waives any and all claims based upon information represented in the Native CADD files.

1.5 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000) FAR 52.211-12.

Mar 08

a. If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$1,495 for each calendar day of delay until the work is completed or accepted.

b. If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

1.6 TIME EXTENSIONS (SEPT 2000) FAR 52.211-13
Oct 00 (NOT USED)

1.7 EXCLUSION OF PERIODS IN COMPUTING COMPLETION SCHEDULES (NOT USED)
24 Feb 92

1.8 CONTRACT DRAWINGS AND SPECIFICATIONS
17 Oct 2007

1.8.1 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000) DFARS 252.236-7001

a. The Government will provide the Contractor, without charge, one set contract drawings and specifications except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

b. The Contractor shall:

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors that might have been avoided by complying with paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

c. In general:

- (1) Large scale drawings shall govern small scale drawings; and
- (2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

d. Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

e. The work shall conform to the specifications and the contract drawings contained in the Appendix J of this document.

1.8.2 Government Furnished Electronic Technical Contract Documents

a. After Award or no later than Notice to Proceed (NTP), the Government will furnish the Contractor a compact disk containing all technical contract documents in electronic media only. This disk will include a complete set of drawing files and technical specification files which have all amendments included. The disk will contain drawing files in PDF format along with technical specifications in PDF format.

b. The PDF files are being provided for the Contractor's use in printing hard copies of contract documents.

c. In addition, native CADD files are provided in accordance with the "AS-BUILT DOCUMENTS" paragraph for the Contractor's use in developing as-built plans.

d. Native files are to be used for As-Built preparation and information only. The PDF files are the contract documents that represent the construction requirements of the contract.

1.9 AS-BUILT DOCUMENTS (NOT USED)

31 January 2005

1.10 AS-BUILT DOCUMENTS FOR DESIGN BUILD PROJECTS

31 January 2005

1.10.1 General

It is the scope of this section to provide guidance to the Contractor on preparing as-built drawings for design-build projects. An as-built drawing is a construction drawing revised to reflect the final as-built conditions of the project as a result of modifications and corrections to the project design required during construction. The final as-built drawings shall not have the appearance of marked up drawings, but that of professionally prepared drawings as if they were the "as designed" drawings.

1.10.2 Maintenance of As-Built Drawings

The Contractor shall keep a careful record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the contract drawings. The Contractor shall enter changes and corrections on drawings promptly to reflect "Current Construction". This update shall be done no less frequently than on a weekly basis for the blue line drawings and update no less frequently than a quarterly basis for the CADD files, which were prepared previously in accordance with Section 01 33 16 DESIGN AFTER AWARD. A confirmation shall be included that the as-builts are up to date with the submission of the monthly project schedule. If the Contractor fails to maintain the as-built drawings as required herein, the Contracting Officer will deduct from the monthly progress payment, an amount representing the estimated monthly cost of maintaining the as-built drawings. Final payment with respect to separately priced facilities or the contract as a whole, will be withheld until proper as-built drawings have been furnished to, and approved by the Contracting Officer (Para. b below). The marked-up set of drawings shall reflect any changes, alterations, adjustments or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design. Both paper and electronic documents shall be available at all times and shall be provided promptly to the Contracting Officer when requested. The Contractor shall be responsible for backup of electronic files during construction and for controlling release of information

Typically, room numbers shown on the contract drawings are selected for design convenience and do not represent the actual numbers intended for use by the end user. Final as-built drawings shall reflect actual room numbers adopted by the end user.

a. Computer Aided Design and Drafting (CADD) Drawings:

Only personnel proficient in the preparation of CADD drawings shall be employed to prepare and modify the construction drawings or prepare additional new drawings. Additions and corrections to the construction drawings shall be equal in quality to that of the originals. Line work, line weights, lettering, layering conventions, and symbols shall be the same as the original line work, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same guidance specified for original drawings. Three dimensional (3D) elements shall be placed in files in their proper locations when using 3D files with spatially correct elements. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings.

- 1) Additions and corrections to the contract drawings shall be accomplished using CADD media files supplied by the Designers of Record. All work by the Contractor shall be done on files in the format in which they are provided. Translation of files to a different format, for the purpose of As-Built production, and then retranslating back to the format originally provided, will not be acceptable. These contract drawings will already be compatible with the Using Agency's system when received by the Contractor. The Using Agency uses Autodesk AutoCAD Release 2008 CADD software system. The media files will be supplied by the Contractor to the COR on CD-ROM. The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings. The Contracting Officer will review final as-built drawings for accuracy and the Contractor shall make all required corrections, changes, additions, and deletions.
- 2) When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 3/16 inch high. All other contract drawings shall be marked in the bottom right-hand corner of each drawing either "AS-BUILT" drawing denoting no revisions on the sheet, or "REVISED AS-BUILT" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

b. Retainage for the final as-built drawings in the amount of \$50,000, or 1%, of the present construction value, whichever is the greater, shall be withheld until the final as-built drawing submittal has been approved by the Government.

1.10.3 Underground Utilities

The drawings shall indicate, in addition to all changes and corrections, the actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Valves, splice boxes and similar appurtenances shall be located by dimensioning along the utility run from a reference point. The average elevation of the top of each run or underground structure shall also be recorded.

1.10.4 As-Built Conditions That are Different From the Contract Drawings

All as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the contract drawings shall be accurately reflected on each drawing. If the as-built condition is accurately reflected on a shop drawing, then furnish that shop drawing in CADD format. The final as-built construction drawing shall reference the shop drawing file that includes the as-built information. In turn, the shop drawing shall reference the applicable construction as-built drawing. Any options shown on drawings and not selected shall be deleted and options selected shall be clearly reflected on final as-built drawings.

1.10.5 Additional As-Built Information that Exceeds the Detail Shown on the Contract Drawings

These as-built conditions include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the contract drawings. Furnish all such shop drawings in CADD format. Fire protection details shall be included such as wiring, piping, and equipment drawings.

1.10.6 Final As-Built Drawings

At the time of Beneficial Occupancy of the project or at a designated phase of the project, final as-built CADD files shall be provided to the Contracting Officer to include in the following:

- (1) On CD-ROM in the format as specified in Section 01 33 16 DESIGN AFTER AWARD
- (2) The record set of approved working as-built drawings

In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, the Contractor shall furnish a new CD-ROM with all drawing sheets, new full size set of affected sheets, and new blue line copy of affected sheets which depict additional changes.

1.10.7 Title Blocks

Title Blocks shall be clearly marked to indicate final as-built drawings.

1.10.8 Other As-Built Documents

All other documents such as design analysis, catalog cuts, certification documents that are not available in native electronic format shall be scanned and provided in an organized manner in Adobe.pdf format.

1.10.9 Final Payment

No separate or direct payment will be made for the work specified herein. All costs associated with this work shall be included in the applicable contract prices for the items requiring as-built drawings listed in the bidding schedule.

1.11 EQUIPMENT DATA, O&M AND REPAIR MANUALS with FIELD TRAINING REQUIREMENTS NOV 2009

1.11.1 Real Property Equipment

Equipment-in-Place Data: Contractor shall be required to make an Equipment-in-Place list of all installed equipment furnished under this contract. This list shall include all information usually listed on manufacturer's name plate. The Form is part of SPECIAL CLAUSES and is included following the SPECIAL CLAUSES, so to positively identify the piece of property. The list shall also include the cost of each piece of installed property F.O.B. construction site. For each of the items which are specified herein to be guaranteed for a specified period from the date of acceptance thereof, the following information shall be given: The name, serial and model number address of equipment supplier, or manufacturer originating the guaranteed item. The information may also be provided in excel spreadsheet format with columns for above information in addition to floor, space id as listed in the drawings, system, and submittal register id number for the item. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Furnish the list in PROJNET SUBMITTAL REGISTER before completion of any segment of the contract work which has an incremental completion date.

Maintenance and Parts Data: The Contractor will be required to furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication which will show detailed parts data on all other equipment subject to repair and maintenance procedures not otherwise required in Operations and Maintenance Manuals specified elsewhere in this contract. This information shall be provided electronically in pdf format with file name included in a separate column or linked worksheet in the equipment data excel spreadsheet as described in the paragraph above. Distribution of directives shall follow the same requirements as listed in paragraph above.

1.11.2 O&M and Repair Manuals

Retainage and Copies: The Contractor shall provide 6 complete copies of the Equipment Operating, Maintenance, and Repair Manuals unless the Technical Specification indicates otherwise. The manuals shall be prepared electronically in pdf format containing bookmarks for each table of contents item. The pdf file shall be referenced in a separate column or linked worksheet in the equipment data excel spreadsheet. Separate manuals shall be provided for each utility system as defined per the Technical Specification. Operations and Maintenance manuals shall be submitted and accepted/approved before field training or 90 days before substantial completion (whichever occurs earlier). An amount of \$20,000 shall be withheld until submittal and acceptance/ approval of O&M manuals is complete. A draft outline and table of contents shall be submitted for acceptance/approval at 50 percent contract completion. See paragraph 1.42- EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS for detail O&M and Repair Manual format.

1.11.3 Field Training

a. Contractor shall conduct a training course for the operating staff for each particular component and system. Where the training period is not identified by the technical specification, a minimum of 1 hour of training shall be provided for that component or system. Training shall only occur after the Manuals have been approved/accepted by the Government and during normal working time, and shall start after the system or component is functionally completed. The field instructions shall cover all of the items contained in the Equipment Operating, Maintenance and Repair Manuals as identified per individual Technical Specifications. The training will include both classroom and "hands-on" training. The Contractor shall submit a lesson plan outlining the information to be discussed during training periods. This lesson plan will be submitted 90 days before contract completion and accepted/approved before the field training occurs. Training shall be documented by the Contractor and a list of attendees shall be furnished to the Government. Training audio/ video shall be digitally recorded on CDs or DVDs and shall be furnished to the Government within ten (10) days following training.

b. The Contractor shall provide all equipment, materials, and trained personnel required to visually and audibly record all site operations and maintenance (O&M) training sessions. The video technician/trainer shall be employed by a video production company that has been in business for a minimum of 2 years. The Contractor shall submit for acceptance by the Government, the resume of the technician/trainer and the video production company, and the proposed video format. The video format shall be one in wide use, and any software necessary to view the video shall be provided to the Government. Video shall be provided to the Government on DVD.

Audio shall be adjusted, filtered or otherwise controlled to ensure the presenter can be understood at all times. Each system or piece of equipment shall be covered on a single DVD or set of DVDs, which shall be identified with a type written label showing the name of the project, equipment or system, and contract number. This same information shall be provided as an introduction on each DVD. When two or more DVDs are provided for a single system or piece of equipment, they shall be packaged as a set in an appropriate storage case. Provide three copies of each DVD(s) for each training session. Training DVDs shall be furnished to the Government within ten (10) working days following training.

1.12 PHYSICAL DATA (APR 1984) FAR 52.236-4.

1 Nov 2007

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

a. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by auger borings. The preliminary geotech data report has been included in Appendix A for reference only.

b. Weather Conditions. The Contractor shall make his own investigations as to weather conditions at the site. Data may be obtained from various National Weather Service offices located generally at airports of principal cities, the nearest to this project being: LaCrosse, WI.

c. Transportation Facilities. Roads in the general area are shown on the drawings.

d. Other Data:

(1) Historical data for all areas may be obtained from:

U. S. Department of Commerce
National Climatic Center
Federal Building
Asheville, NC 28801

1.13 AVAILABILITY OF UTILITIES

6 Feb 2009

1.13.1 Availability and Use of Utility Services

The Government will not furnish any utilities or sanitary facilities to the Contractor for their use even if available at the work site. The Contractor is responsible for procuring and/or providing these items themselves or obtaining them from a private entity (utility company) through coordination with the Resident Engineer. The Contractor is responsible for paying all utilities used at the proposed site and trailer location.

1.13.2 Alterations to Utilities

Where changes and relocations of utility lines are noted to be performed by others, the Contractor shall give the Contracting Officer at least thirty (30) days written notice in advance of the time that the change or relocation is required. In the event that, after the expiration of thirty (30) days after the receipt of such notice by the Contracting Officer, such utility lines have not been changed or relocated and delay is occasioned to the completion of the work under contract, the Contractor will be entitled to a time extension equal to the period of time lost by the Contractor after the expiration of said thirty (30) day period. Any modification to existing or relocated lines required as a result of the Contractor's method of operation shall be made wholly at the Contractor's expense and no additional time will be allowed for delays incurred by such modifications.

1.13.3 Interruptions of Utilities

1. No utility services shall be interrupted by the Contractor to make connections, to relocate, or for any purpose without approval of the Contracting Officer.

2. Request for Permission to shut down services shall be submitted in writing to the Contracting Officer not less than seven (7) days before date of proposed interruption. The request shall give the following information:

- (a) Nature of Utility (Gas, L.P. or H.P., Water, etc.)
- (b) Size of line and location of shutoff
- (c) Buildings and services affected
- (d) Hours and date of shutoff
- (e) Estimated length of time services will be interrupted

3. Services shall not be shut off until receipt of approval of the proposed hours and date from the Contracting Officer.

4. Shutoffs which will cause interruption of Government work operations as determined by the Contracting Officer shall be accomplished during regular non-work hours or on non-work days of the Using Agency without any additional cost to the Government.

5. Operation of valves on water mains will be by Government personnel. Where shutoff of water lines interrupts service to fire hydrants or fire sprinkler systems, the Contractor shall arrange his operations and have sufficient material and personnel available to complete the work without undue delay or to restore service without delay in event of emergency.

6. Flow in gas mains which have been shut off shall not be restored until the Government inspector has determined that all items serviced by the gas line have been shut off.

1.14 QUANTITY SURVEYS (APR 1984) FAR 52.236-16 (NOT USED)

24 February 1992

1.15 LAYOUT OF WORK

15 May 2009

The Contractor shall be responsible for all layout required to properly control the work under this contract as determined by the Contracting Officer. The Contractor shall furnish at his own expense, all materials and labor as may be required to control the work in the field. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the construction drawings. The Contractor shall also be responsible for maintaining and preserving all stakes and other surveying marks and monumentation previously established unless authorized to remove them. If such survey monumentation or marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

1.16 PERMITS

Contractor is required to investigate, submit for any permits necessary for the design and construction of this project. All permit applications shall be submitted to the Contracting Officer Representative. The Contractor shall pay all permit fees.

1.17 PERFORMANCE OF WORK BY THE CONTRACTOR

a. Per "PERFORMANCE OF WORK BY THE CONTRACTOR" (APR 1984), FAR 52.236-1. The Contractor shall perform on the site, and with its own organization, work equivalent to at least 20 percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. However, if the contract is awarded to a certified HUBZone firm, refer to Section 00100, BIDDING SCHEDULES/INSTRUCTIONS TO BIDDERS, Clause LCL 0219-003, for the required percentage of work to be performed; and if the contract is awarded to a certified 8(a) firm, refer to Section 00600, REPRESENTATIONS AND CERTIFICATIONS, Clause FAR 52.219-14.

b. For purposes of this paragraph, "WORK BY THE CONTRACTOR" is defined as prime Contractor direct contract labor (including testing and layout personnel), exclusive of other general condition or field overhead personnel, material, equipment, or subcontractors. The "TOTAL AMOUNT OF WORK" is defined as total direct contract labor (including testing and layout personnel), exclusive of other general condition or field overhead personnel, material, or equipment.

c. Within 7 days after the award of any subcontract, either by himself or a subcontractor, the Contractor shall deliver to the Contracting Officer a completed SF1413 Statement and Acknowledgement,

"Statement and Acknowledgment." The form shall include the subcontractor's acknowledgement of the inclusion in his subcontract of the clauses of this contract entitled "Davis-Bacon Act," "Contract Work Hours and Safety Standards Act-Overtime Compensation," "Apprentices and Trainees," "Compliance with Copeland Regulations," "Withholding of Funds," "Subcontracts," "Contract Termination-Debarment," and "Payrolls and Basic Records." Nothing contained in this contract shall create any contractual relation between the subcontractor and the Government.

1.18 SUPERINTENDENCE OF SUBCONTRACTORS

24 February 1992

a. The Contractor shall be required to furnish the following, in addition to the superintendence required by CONTRACT CLAUSE: SUPERINTENDENCE BY THE CONTRACTOR.

(1) If more than 50 percent and less than 70 percent of the value of the contract work is subcontracted, one superintendent shall be provided at the site and on the Contractor's payroll to be responsible for coordinating, directing, inspecting and expediting the subcontract work.

(2) If 70 percent or more of the value of the work is subcontracted, the Contractor shall be required to furnish two such superintendents to be responsible for coordinating, directing, inspecting and expediting the subcontract work.

b. If the Contracting Officer, at any time after 50 percent of the subcontracted work has been completed, finds that satisfactory progress is being made, he may waive all or part of the above requirements for additional superintendence subject to the right of the Contracting Officer to reinstate such requirement if at any time during the progress of the remaining work he finds that satisfactory progress is not being made.

1.19 IDENTIFICATION OF EMPLOYEES

11 Jun 2009

a. The Contractor shall be responsible for furnishing an identification badge/card to each employee prior to the employees work onsite, and for requiring each employee engaged on the work to display identification as may be approved and directed by the Contracting Officer. All prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of the employee. The Contractor shall obtain and submit fingerprints of all persons employed or to be employed on the project.

b. The Contractor is required to provide a Local Agency Check for each individual that will be working on this contract. See Paragraph "COMPLIANCE WITH POST/BASE REGULATIONS" for instructions.

1.20 NO ASBESTOS-CONTAINING MATERIAL (ACM) CERTIFICATION

April 2009

a. Design Phase

Before final payment of the project design fee, the designer of record (DOR) will submit to the government, on their firm's letterhead, a signed, dated copy of the following statement:

I hereby certify that no asbestos-containing material (ACM) was specified as a building material in any construction document for this project.

Furthermore, I certify that no product containing mineral fibers was specified as a building material in any construction document for this project unless I either

" Have on file and have submitted to the Government, the manufacturer's certification that the material does not contain asbestos, or

" Have supplied to the Government documentation to show that the material has been microscopically examined by an AIHA- or NVLAP-certified laboratory and the lab has determine that it does not contain asbestos."

b. Construction Phase

Before final payment to the Contractor, the Contractor's Project Engineer/Manager will sign and submit to the Government, on the contracting firm's letterhead, a dated copy of the following statement:

I hereby certify that to the best of my knowledge no asbestos-containing material (ACM) was used as a building material during this project.

I understand that the building owner presumes that all materials marked 'May contain mineral fibers' are asbestos unless I either

" Have on file and have submitted to the Government the manufacturer's certification that the material does not contain asbestos, or

" Have supplied to the Government documentation to show that the material has been microscopically examined by an AIHA- or NVLAP-certified laboratory and the lab has determine that it that it does not contain asbestos."

1.21 WARRANTY OF CONSTRUCTION (MAR 1994) & ALTERNATE 1 (APR 1984) FAR 52.246-21.

a. General Requirements

1. In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph 1.21.a.(10) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

2. This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession. The contractor is responsible to provide a person within a 200 mile radius to verify the warranty issue and to oversee the warranty work.

(a) As a part of the one year warranty inspection, the Contractor shall conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging". In accordance with paragraph 1.21.a.(3) and 1.21.a.(4) below, the Contractor shall be required to replace all damaged materials and to locate and repair sources of moisture penetration.

3. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of:

(a) The Contractor's failure to conform to contract requirements; or

(b) Any defect of equipment, material, workmanship, or design furnished.

4. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

5. The Contracting Officer shall notify the Contractor, in writing, (see para. 1.21.c.(4) and 1.21.e) within a reasonable time after the discovery of any failure, defect, or damage.

6. If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, (see para. 1.21.e) the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

7. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

(a) Obtain all warranties that would be given in normal commercial practice;

(b) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

(c) Provide names, addresses, and telephone numbers of all subcontractors, equipment suppliers, or manufacturers with specific designation of their area of responsibilities if they are to be contacted directly on warranty corrections; and

(d) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

8. In the event the Contractor's warranty under paragraph 1.21.a.(2) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

9. Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

10. This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

11. Defects in design or manufacture of equipment specified by the Government on a "brand name and model" basis, shall not be included in this warranty. In this event, the Contractor shall require any subcontractors, manufacturers, or suppliers thereof to execute their warranties, in writing, directly to the Government.

b. Warranty Management

1. Warranty Management Plan: The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction in FAR 52.246-21 with Alternate. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate.

Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

(a) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

(b) Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

(c) A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. Names, addresses and telephone numbers of sources of spare parts.
6. Warranties and terms of warranty. This shall include one-year overall warranty of construction. Items which have extended warranties shall be indicated with separate warranty expiration dates.
7. Cross-reference to warranty certificates as applicable.
8. Starting point and duration of warranty period.
9. Summary of maintenance procedures required to continue the warranty in force.
10. Cross-reference to specific pertinent Operation and Maintenance manuals.
11. Organization, names and phone numbers of persons to call for warranty service.
12. Typical response time and repair time expected for various warranted equipment.

(d) The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

(e) Procedure and status of tagging of all equipment covered by extended warranties.

(f) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

c. Performance Bond

1. The Contractor's Performance Bond will remain effective throughout the construction warranty period and warranty extensions.

2. In the event the Contractor or his designated representative(s) fails to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Contracting Officer shall have a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Contracting Officer shall have the work performed by others, and after completion of the work, may make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

3. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.

4. Following oral or written notification of required warranty repair work, the Contractor will respond as dictated by para. 1.21.e. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Contracting Officer to proceed against the Contractor as outlined in the paragraph 1.21.c.(2) and/or (3) above.

d. Pre-Warranty Conference

Prior to contract completion and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this clause. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, will be continuously available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of his responsibilities in connection with other portions of this provision.

e. Contractor's Response to Warranty Service Requirements

Following oral or written notification by the Contracting Officer or an authorized representative of the installation designated in writing by the Contracting Officer, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below. The Contractor shall submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframe specified, the Government will perform the work and backcharge the construction warranty payment item established.

1. First Priority Code 1: Perform onsite inspection to evaluate situation, determine course of action, initiate work within 24 hours and work continuously to completion or relief.

2. Second Priority Code 2: Perform onsite inspection to evaluate situation, determine course of action, initiate work within 48 hours and work continuously to completion or relief.

3. Third Priority Code 3: All other work to be initiated within 5 work days and work continuously to completion or relief.

4. The "Warranty Service Priority List" is as follows:

Code 1 Air Conditioning System:

- a. Buildings with computer equipment.

Code 2 Air Conditioning Systems:

- a. Air conditioning leak in part of building, if causing damage.
- b. Air conditioning system not cooling properly.
- c. Admin buildings with ADP equipment not on priority list.

- Code 1 Electrical:
 - a. Power failure (entire area or any building operational after 1600 hours).
 - b. Security lights.
 - c. Smoke detectors and fire alarm systems.
- Code 2 Electrical:
 - a. Power failure (no power to a room or part of building).
 - b. Receptacle and lights.
- Code 3 Electrical:
 - a. Street, parking area lights.
- Code 1 Gas:
 - a. Leaks and breaks.
- Code 1 Heat:
 - a. Area power failure affecting heat.
- Code 3 Interior:
 - a. Floor damage.
 - b. Paint chipping or peeling.
- Code 1 Intrusion Detection Systems:
 - a. High security areas.
- Code 2 Intrusion Detection Systems:
 - a. Systems other than those listed under Code 1.
- Code 2 Plumbing:
 - a. Flush valves not operating properly.
 - b. Fixture drain, supply line commode, or water pipe leaking.
 - c. Commode leaking at base.
- Code 3 Plumbing:
 - a. Leaking faucets.
- Code 1 Roof Leaks:
 - a. Temporary repairs will be made where major damage to property is occurring.
- Code 2 Roof Leaks:
 - a. Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.
- Code 1 Sprinkler System:
 - a. All sprinkler systems, valves, manholes, deluge systems, and air systems to sprinklers.
- Code 1 Water (Exterior):
 - a. Normal operation of water pump station.
- Code 2 Water (Exterior):
 - a. No water to facility.
- Code 1 Water, Hot (and Steam):
 - a. Admin Facility.

Code 2 Water, Hot:

- a. No hot water in portion of building listed under Code 1.

5. Should parts be required to complete the work and the parts are not immediately available, the Contractor shall have a maximum of 12 hours after arrival at the job site to provide the Contracting Officer or an authorized representative of the installation designated in writing by the Contracting Officer, with firm written proposals for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractor's proposals shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair. The Contracting Officer or an authorized representative of the installation designated in writing by the Contracting Officer, will evaluate the proposed alternatives and negotiate the alternative considered to be in the best interest of the Government to reduce the impact of the emergency condition. Alternatives considered by the Contracting Officer or an authorized representative of the installation designated in writing by the Contracting Officer will include the alternative for the Contractor to "Do Nothing" while waiting until the required parts are available to perform permanent warranty repair. Negotiating a proposal which will require Government participation and the expenditure of Government funds shall constitute a separate procurement action by the using service.

f. Equipment Warranty Identification Tags

1. The Contractor at the time of installation shall provide warranty identification tags on all Contractor and Government furnished equipment which he has installed.

(a) The tags shall be suitable for interior and exterior locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Contractor furnished equipment that has differing warranties on its components will have each component tagged.

(b) Sample tags shall be submitted for Government review and approval. These tags shall be filled out representative of how the Contractor will complete all other tags.

(c) Tags for Warrantied Equipment: The tag for this equipment shall be similar to the following. Exact format and size will be as approved.

EQUIPMENT WARRANTY
CONTRACTOR FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

CONTRACTOR NAME

CONTRACTOR WARRANTY EXPIRES

MFG WARRANTY(IES) EXPIRE

EQUIPMENT WARRANTY
GOVERNMENT FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

DATE EQUIP PLACED IN SERVICE

MFG WARRANTY(IES) EXPIRE

(d) If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag. The Contractor warranty expires (warranty expiration date) and the final manufacturer's warranty expiration date will be determined as specified by para. 1.21.a.

2. Execution. The Contractor will complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment.

3. Payment. The work outlined above is a subsidiary portion of the contract work, and has a value to the Government approximating 5% of the value of the Contractor furnished equipment. The Contractor will assign a value of that amount in the breakdown for progress payments mentioned in the Contract Clause: PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS.

4. Equipment Warranty Tag Replacement. As stated in para. 1.21.f, the Contractor's warranty with respect to work repaired or replaced shall run for one year from the date of repair or replacement. Such activity shall include an updated warranty identification tag on the repaired or replaced equipment. The tag shall be furnished and installed by the Contractor, and shall be identical to the original tag, except that the Contractor's warranty expiration date will be one year from the date of acceptance of the repair or replacement.

1.22 PAYMENT FOR MOBILIZATION AND PREPARATORY WORK (JAN 1997) DFARS 252.236-7003
20 August 1997 (Version 1) (NOT USED)

1.23 PAYMENT FOR MOBILIZATION AND DEMOBILIZATION (DEC 1991) DFARS 252.236-7004.
24 February 1992 (Version 2) (NOT USED)

1.24 SALVAGE MATERIALS AND EQUIPMENT (NOT USED)
24 February 1992

1.25 IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY
12 Oct 2007

a. The Government will furnish to the Contractor the property identified in the Schedule to be incorporated or installed into the work or used in performing the contract. The listed property will be furnished at the place specified below. When the property is delivered, the Contractor shall verify its quantity and condition and acknowledge receipt in writing to the Contracting Officer. The Contractor shall also report in writing to the Contracting Officer within 24 hours of delivery any damage to or shortage of

the property as received. All such property shall be installed or incorporated into the work at the expense of the Contractor, unless otherwise indicated in this contract.

Location of GFP: GFP is currently located near or will be delivered to the project site.

b. The Contractor is required to accept delivery, pay any demurrage or detention charges, and unload and transport the property to the job site at its own expense.

c. Each item of property to be furnished under this clause shall be identified in the Schedule by quantity, item, and description.

<u>Quantity</u>	<u>Item</u>	<u>Description</u>
Various	Furniture Comm Equip IDS	Systems Furniture Communications Equipment for Data Center Intrusion Detection System

1.26 PROJECT SIGN

1 August 1996

a. Version 1 General. The Contractor shall furnish and erect at the location directed one project sign. The sign shall be lettered on one side only and shall conform to the details shown on the sketch bound with the SPECIAL CLAUSES.

Project nomenclature shall be: FT MCCOY DOIM INFORMATION SYSTEMS FACILITY

Architect-Engineer name shall be: TBD

b. Materials. The sign shall be constructed of good sound materials suitable for the purpose. Lumber shall be salt treated softwood of No. 2 grade or better. Sizes shown are nominal. Plywood shall be 1/2-inch, B-B, marine grade. Screws shall be of commercial quality and of sizes shown.

c. Painting. The sign and posts shall be given one prime coat and two finish coats of gloss exterior-type enamel paint, Glidden, Reddish Brown, Part No. 4537-5PER. All lettering shall be white.

d. Logos (Army and Corps Castle) will be furnished to the Contractor by Contracting Officer and shall be applied at the location shown.

e. Erection and Maintenance. The sign shall be erected at the designated location. Sign shall be plumb and backfill of post holes shall be well tamped to properly support the sign in position throughout the life of the contract. The sign shall be maintained in good condition until completion of the contract, shall remain the property of the Contractor, and shall be removed from the site upon completion of work under the contract.

f. Payment. No separate payment will be made for furnishing and erecting the project sign as specified and costs thereof shall be considered a subsidiary obligation of the Contractor.

1.27 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER. ER 415-1-15 (31 Oct 1989) 15 May 2008

a. This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the contract clause entitled "Default: Fixed Price Construction". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

1. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

2. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
20	15	7	7	6	7	7	7	6	6	9	15

Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated listed above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)".

1.28 WAGE RATES 1 February 1995

a. The decision of the Secretary of Labor, covering rates of wages, including fringe benefits to be paid laborers and mechanics performing work under this contract, is attached hereto. The payment for all classes of laborers and mechanics actually employed to perform work under the contract will be specified in the following contract clauses: DAVIS-BACON ACT, CONTRACT WORK HOURS AND SAFETY STANDARDS ACT, and THE COPELAND ACT.

Wage decision included is: W1100011 Building

1. The building decision applies to construction of the DOIM facility. The Heavy/Highway decision applies to any work located outside the exterior wall of the building(s).

2. The work to be performed is located in the State of Wisconsin, Monroe County.

1.29 PURCHASE ORDERS (NOT USED)

15 June 1990

1.30 INTERFERENCE WITH TRAFFIC AND PUBLIC AND PRIVATE PROPERTY

15 June 1990

a. The Contractor at all times shall dispose his plant and conduct the work in such manner as to cause as little interference as possible with private and public travel. Damage (other than that resulting from normal wear and tear) to roads, shall be repaired to as good a condition as they were prior to the beginning of work and to the satisfaction of the Contracting Officer.

1.31 SEQUENCE OF WORK (NOT USED)

15 September 1995

1.32 GOVERNMENT FIELD OFFICE FACILITIES AND SERVICES

1 August 1996

a. General. The contractor shall provide a trailer for the government, separate from the contractor trailer. This trailer is for the exclusive use of the government. The Government field office facilities will be located as indicated and specified in the technical portions of these specifications. Electrical, fuel, water and sewage disposal facilities shall be provided as specified in the technical portions of these specifications and shall be maintained by the Contractor for the duration of the contract. All electricity and fuel oil required for operation of the field office facilities shall be furnished by the Contractor for the duration of the contract. No separate payment will be made for maintaining the facilities and furnishing these utilities and all costs in connection therewith shall be included in other items authorized for payment. The buildings and facilities will not be left in place upon completion of the contract. The Contractor's trailer shall be removed from the site and all utilities removed. The site shall be re-graded to pre-construction conditions acceptable to the Contracting Officer. The entire site shall be seeded.

b. Utility Services. The Contractor shall arrange for and pay all costs for water, electricity, liquefied petroleum or fuel oil, and other utilities as necessary for the field office starting on or about NTP and continuing for the life of the contract. The existing equipment shall be cleaned and then serviced a minimum of biweekly.

c. Payment. No separate payment will be made for these Contractor-furnished services, and all costs thereof shall be incidental to the various bid items of the contract.

1.33 COMPLIANCE WITH POST/BASE REGULATIONS

19 Sep 2007

a. The site of the work is on a military reservation and all rules and regulations issued by the Commanding Officer covering general safety, security, sanitary requirements, pollution control and traffic regulations, shall be observed by the Contractor. Information regarding these requirements may be obtained by contacting the Contracting Officer, who will provide such information or assist in obtaining same from appropriate authorities.

b. Contractor personnel shall park only in areas authorized by the Contracting Officer.

1.34 EQUIPMENT AND OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)

EFARS 52.231-5000.

9 April 2008

a. This does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

b. Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the Contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the Contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region IV. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time of negotiations shall apply.

c. Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

d. When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the Contracting Officer shall request the Contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Cover Sheet.

e. Whenever a modification or equitable adjustment of contract price is required, the Contractor's cost proposals for equipment ownership and operating expenses shall be determined in accordance with the requirements of SPECIAL CONTRACT REQUIREMENT: EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE. A copy of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule" of the 12 regions is available for review by downloading at the Techinfo Web site <http://140.194.76.129/publications/eng-pamphlets/>.

1.35 LABOR, EQUIPMENT, AND MATERIAL REPORTS

15 June 1990

a. Daily Equipment Report. The Contractor shall submit a daily report of all Contractor-owned or rented equipment at the jobsite. A similar report is required for all subcontractor equipment. The subcontractor's report may be separate or included with the Contractor's report provided the equipment is adequately identified as to ownership. The required equipment report shall include each item of equipment (hand-operated small tools or equipment excluded) on the job and shall specifically identify each item as to whether it is Contractor-owned or rented, shifts, hours of usage, down time for repairs, and standby time. Identification of the equipment shall include make, model and plant number of all items. Separate identification by a key sheet providing these data may be utilized with the daily report indicating the type of equipment and the equipment plant numbers. The format of the Daily Equipment Report will be as approved by the Government in the field.

b. Labor, Equipment and Material Report for Extra Work/Cost. A Report shall also be submitted by the Contractor listing any labor, equipment and materials expended on and/or impacted by any change order directed by the Government and for which total price/time agreement has not been reached. These requirements also apply to subcontractors at any tier. The same Report is required at any time the Contractor claims or intends to claim for extra costs whether or not there is Government recognition (constructive changes). This requirement is in addition to any Contractor "Notice" or "Reservation of

Rights". Submittal of such a report will not be construed as satisfying the "Notice" required under the "Changes" clause or any other clause. But, absence of such Reports submitted to the Government contemporaneously with the alleged extra work/cost will be considered as evidence that no such extra work/cost occurred that are chargeable to the Government.

c. The Report shall be detailed to the degree required by the Government in the field and shall contain the following as a minimum:

1. The cause of the extra labor, equipment or materials costs.
2. For extra labor - Indicate crew, craft, hours, location and cost. Describe nature or type of extra costs, i.e, extra work, overtime, acceleration, interference, reassignment, mobilizations and demobilizations, supervision, overhead, type of inefficiency, etc.
3. For Extra Equipment: Indicate type and description, hours, location, cost; whether working, idle, standby, under repair, extra work involved, etc.
- 4.. For Extra Material: Indicate type and description, where used, whether consumed, installed or multi-use, quantity, cost, extra work involved, etc.
5. Affected Activities: Relate to Contract Schedule (Network Analysis); demonstrate whether delay or suspension is involved.
6. Segregate all entries by prime and each subcontractor.
7. Summarize costs daily and by cumulative subtotal or with frequency required by the Government.

d. This report will not be considered as evidence that any of the alleged extra costs actually occurred. The report will be used to check against over obligation of funds for change orders directed prior to price/time agreement and to track alleged extra costs the Contractor considers otherwise chargeable against the Government. The Government may respond at any interval to either challenge, amend or confirm the report. Absence of a Government response is not to be considered acquiescence or denial. The Government may order work stoppage if deemed necessary to avoid overobligation of funds. The frequency of the report shall be daily or as otherwise approved by the Government representative in writing.

1.36 ENGLISH-SPEAKING REPRESENTATIVE NOV 2009

At all times when any performance of the work at any site is being conducted by any employee of the Contractor or his subcontractors, the Contractor shall have a representative present at each site who has the capability of receiving instructions in the English language, fluently speaking the English language and explaining the work operations to persons performing the work, in the language that those performing the work are capable of understanding. The Contracting Officer shall have the right to determine whether the proposed representative has sufficient technical bilingual capabilities, and the Contractor shall immediately replace any individual not acceptable to the Contracting Officer.

1.37 NOTICE OF SOIL TREATMENT (NOT USED)

1.38 SALES TAX 13 Feb 2009

Some states have tax exemptions for certain aspects of work when done for the federal government and the Contractor shall check with the state where the project is located for more information. If a

sales tax exemption is applicable, the Contractor is responsible for obtaining any required exemption certification. The exemption certificate shall be submitted to the Contracting Officer.

1.39 (NOT USED)

1.40 PAYMENT FOR MATERIALS DELIVERED OFFSITE. (MAR 1995) EFARS 52.232-5000. (NOT USED)

27 January 2010

1.41 INSURANCE--WORK ON A GOVERNMENT INSTALLATION (SEP 1989) FAR 52.228-5.

17 July 1992

a. The Contractor shall, at its own expense, provide and maintain during the entire performance of this contract at least the kinds and minimum amounts of insurance required in the Schedule or elsewhere in the contract.

1. Coverage complying with State laws governing insurance requirements, such as those requirements pertaining to Workman's Compensation and Occupational Disease Insurance. Employer's Liability Insurance shall be furnished in limits of not less than \$100,000.00 except in states with exclusive or monopolistic funds.

2. Comprehensive General Liability Insurance for bodily injury coverage shall be furnished in limits of not less than \$500,000 per occurrence.

3. Comprehensive Automobile Liability Insurance for both bodily injury and property damage, shall be furnished in limits of not less than \$200,000.00 per person, \$500,000.00 per accident for bodily injury, and \$20,000.00 per accident for property damage. When the Financial Responsibility or Compulsory Insurance Law of the State, requires higher limits, the policy shall provide for coverage of at least those higher limits.

b. Before commencing work under this contract, the Contractor shall submit to the Contracting Officer in writing that the required insurance certification has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective (1) for such period as the laws of the State in which this contract is to be performed prescribe, or (2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

c. The Contractor shall insert the substance of this clause, including this paragraph, in subcontracts under this contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

1.42 EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS

NOV 2009

1.42.1 Repair Manual Format

1.42.1.1 Hard Cover Binders

The manuals shall be hard cover with posts, or 3-ring binders, so sheets may be substituted easily. The following identification shall be printed on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS," the project name, building number, and an indication of

utility or systems covered, the name of the Contractor, and the Contract number. Manuals shall be approximately 8-1/2 by 11-inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for the project must be similar in appearance, and be of professional quality.

1.42.1.2 Warning Page

A warning page shall be provided to warn of potential dangers (if they exist, such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, high pressures, etc.). The warning page shall be placed inside the front cover and in front of the title page. Also, any necessary Material Safety Data Sheets (MSDS) shall be included here.

1.42.1.3 Title Page

The title page shall include the same information shown on the cover and show the name of the preparing firm and the date of publication.

1.42.1.4 Table of Contents

Each volume of the set of manuals for this project shall include a table of contents, for the entire set, broken down by volume.

1.42.2 Table of Contents Requirements

TABLE OF CONTENTS

PART I. Introduction.

- (a) Equipment Description.
- (b) Functional Description.
- (c) Installation Description.

PART II. Operating Principles.

PART III. Safety.

PART IV. Preventive Maintenance

- (a) Preventive Maintenance Checklist. Lubrication
- (b) Charts and Diagrams.

PART V. Spare Parts Lists

- (a) Troubleshooting Guide
- (b) Adjustments
- (c) Common Repairs and Parts Replacement

PART VI. Illustrations

1.42.2.1 Part I Introduction

Part I shall provide an introduction, equipment or system description, functional description and theory of operation, and installation instructions for each piece of equipment. Complete instructions for uncrating, assembly, connection to the power source and pre-operating lubrication shall be included in the installation instructions as applicable. Illustrations, including wiring and cabling diagrams, are required as appropriate in this section. Halftone pictures of the equipment should be

included in the introduction and equipment description, as well as system layout drawings with each item of equipment located and marked. Copies of previously submitted shop drawings shall not be used in these manuals.

1.42.2.2 Part II Operating Principles

Part II shall provide complete instructions for operating the system, and each piece of equipment. Illustrations, halftone pictures, tables, charts, procedures, and diagrams are required when applicable. This will include step-by-step procedures for start-up and shutdown of both the system and each component piece of equipments, as well as adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions. Performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates shall be shown here, also. Marked-up catalogs or catalog pages do not satisfy this requirement. Performance information shall be presented as concisely as possible and contain only data pertaining to equipment actually installed. Actual test data collected for Contractor performance shall be included here.

1.42.3 Part III Safety

Part III shall contain the general and specific safety requirements peculiar to each item of equipment. Safety information should be repeated as notes cautions, and warnings in other sections where appropriate to operations described.

1.42.4 Part IV Preventive Maintenance

Part IV shall contain a troubleshooting guide, including detailed instructions for all common adjustments and alignment procedures, including a detailed maintenance schedule. Also, include a diagnostic chart showing symptoms and solutions to problems. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings. Instructions shall be included for the removal, disassembly, repair, reassembly, and replacement of parts and assemblies where applicable and the task is not obvious.

1.42.5 Part V Spare Parts List

Part V shall contain a tabulation of description data and parts location illustrations for all mechanical and electrical parts. The heading of the parts list shall clearly identify the supplier, purchase order number, and equipment. The unit price for each part shall be included, also. Parts shall be listed by major assemblies, and the listing shall be arranged in columnar form. Also, names and addresses of the nearest manufacturer's representatives will be included, as well as any special warranty information.

1.42.6 Part VI Illustrations

Part VI shall contain assembly drawings for the complete equipment or system and for all major components. Complete wiring diagrams and schematics shall be included. Other illustrations, such as exploded views, block diagrams, and cutaway drawings, are required as appropriate.

1.42.7 Framed Instructions

Framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, including equipment, ductwork, piping valves, dampers, and control sequence, shall be posted at a location near the equipment described. Condensed operating instructions explaining preventive maintenance procedures methods of checking the system for normal safe operation, valve schedule and procedures for safely starting and

stopping the system shall be prepared in type form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. Proposed diagrams, instructions, and other sheets shall be submitted prior to posting. The framed instructions shall be posted before field training.

1.43 SCAFFOLDING

July 2003

a. The following requirements supplement EM 385-1-1. In the event of a conflict between these requirements and EM 385-1-1, the more strict requirement shall take precedence.

1. Competent Person and Crew Qualifications and Training. All scaffold systems shall be erected, inspected and disassembled under the direction of a competent person. The competent person must be present and on site during these operations. The qualifications and training of the competent person and the crew performing the work shall be submitted to the Contracting Officer and accepted prior to commencement of the work. All scaffold systems must be inspected daily and certified as usable prior to use each days use by the competent person. Scaffolds shall also be inspected and certified by the competent person upon completion of any changes to the scaffolding system i.e. adding or removing a level or etc. The competent person must be present and on site during these changes to the scaffold system. The Contractor shall develop a system that notifies all parties of the certification status. The use a red/green tag system denoting the serviceability is an acceptable certification system.

2. A scaffolding erection plan shall be submitted for all scaffold systems regardless of type scaffold to be used. This plan shall include erection and dismantling operations and all manufacture's details of the system and shall demonstrate compliance with EM 385-1-1. The plan shall be accepted by the Contracting Officer prior to the erection of the scaffold. This plan shall be reviewed at the preparatory and initial meetings with all parties involved in the scaffolding operation and use thereof. In the event others crafts will be using the scaffolding system, they shall also be briefed on the proper use of the system.

3. Every level of conventional and masonry type scaffolding systems shall be fully planked and include handrails and toe boards. The Contractor is advised that he must analyze the added weight of this requirement on the capacity of the scaffold system and adjust his operations accordingly. All personnel erecting and dismantling scaffolds must be protected by a personal fall protection system.

4. Access to any type scaffold system above 6 (six) feet shall be by stair tower.

1.44 USE OF INCLINOMETER FOR LONG BED DUMP TRUCKS (DACF BULLETIN 25 MARCH 1993) (NOT USED)

4 June 1993

1.45 AVAILABILITY OF SAFETY AND HEALTH REQUIREMENTS MANUAL (EM 385-1-1).

17 May 2000

As covered by CONTRACT CLAUSE "ACCIDENT PREVENTION", compliance with EM 385-1-1 is a requirement for this contract. Copies may be purchased for \$31.00 each at the following address:

United States Government Bookstore
Room 118, Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222-4003
Telephone: (412) 395-5021 FAX: (412) 395-4547

Or downloaded from the following website:

http://140.194.76.129/publications/eng-manuals/em385-1-1/2008_English/toc.html

1.46 FIRE PROTECTION DURING CONSTRUCTION

March 2005

The Contractor is alerted to the requirements of Contract Clause "CLEANING UP" and more specifically to the requirements for fire protection during construction spelled out in UFC 3-600-1, EM 385-1-1, and NFPA No. 241 Building Construction and Demolition Operations. This item must be covered in the submittal required under Contract Clause "ACCIDENT PREVENTION".

1.47 HAUL ROADS (NOT USED)

2 Jan 1996

1.48 RADIOACTIVE MATERIAL/EQUIPMENT (NOT USED)

13 March 1996

1.49 CONSTRUCTION/SITE MANAGEMENT STANDARDS FOR CONSTRUCTION ON AIR MOBILITY COMMAND (AMC) INSTALLATIONS (NOT USED)

17 August 1998

1.50 CONSTRUCTION HAZARD COMMUNICATION

1 November 1991

a. The Contractor is required to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1926.59). This standard is designed to inform workers of safe and appropriate methods of working with hazardous substances in the workplace. The standard has five requirements, and every hazardous or potentially hazardous substance used or stored in the work area is subject to all five. They are:

1. Hazard Evaluation. Any company which produces or imports a chemical or compound must conduct a hazard evaluation of the substance to determine its potential health or physical hazard. The hazard evaluation consists of an investigation of all the available scientific evidence about the substance. The Contractor is required to assure that all producers (manufacturer/distributors) have performed these evaluations and transmit the required information with any hazardous materials being used or stored on the project site. From the hazard evaluation, a substance may be classified as a health hazard, or a physical hazard. These classifications are then further broken down according to type:

Health Hazards

Carcinogens
Irritants
Sensitizers
Corrosives
Toxic substances
Highly toxic
substances
Substances harmful
to specific organs or
parts of the body

Physical Hazards

Combustible liquids
Compressed gases
Explosives
Flammables
Organic peroxides
Unstable substances
Water-reactive
substances

2. Warning Labels. If a chemical is hazardous or potentially hazardous, the producer or importer must affix a warning label to every container of that chemical before it leaves his facility. The Contractor must assure these labels are attached and legible. The label must identify the chemical, state the hazard, and give the name and address of the producer or importer. If the hazardous substance is transferred to another container, that container must then be labeled, tagged, or marked with the name of the chemical and the appropriate hazard warning. Warning labels should be replaced immediately if they are defaced or removed.

3. Material Safety Data Sheets. The producer or importer must also supply a material safety data sheet (MSDS). The Contractor must keep these available in the work area where the substance is used, so that the people using the substance can easily review important safety and health information, such as:

The hazard possible from misuse of the substance
Precautions necessary for use, handling, and storage
Emergency procedures for leaks, spills, fire and first aid
Useful facts about the substance's physical or chemical properties

4. Work Area Specific Training. Because of hazardous substance may react differently depending on how it is used or the environment of the work area, the Contractor must conduct work area specific training; special training which takes the Contractor's operations, environment, and work policies into consideration. Work area training presents:

- a) The hazardous substances which are present in the work place and the hazards they pose
- b) Ways to protect against those hazards, such as protective equipment, emergency procedures, and safe handling
- c) Where the MSDS's are kept, and an explanation of the labeling system
- d) Where the Contractor's written Hazard Communication Program is located

5. The Written Hazard Communication Program. In accordance with OSHA requirements, the Contractor must prepare a written Hazard Communication Program. This document will be included in the Contractor's Accident Prevention Plan. This document states how the Contractor plans to ensure that hazardous materials are appropriately labeled, how and where MSDS's will be maintained, and how employees will be provided with specific information and training.

1.51 ENVIRONMENTAL PROTECTION CLAUSE TANK CLEANING AND PAINTING (DLA NOV 1989)
(NOT USED)

15 June 1990

1.52 MECHANICAL/ELECTRICAL ROOM LAYOUT (LRL)

24 February 1992

Detailed mechanical/electrical room layout drawings shall be submitted for approval in accordance with LRL Section 01 33 00 SUBMITTAL PROCEDURES. Layout drawings shall show location and maintenance clearances for all mechanical/electrical room equipment, and all utility runs/chases for mechanical, electrical, telephone and other similar systems. Drawings shall be submitted at the same time as the submittals for the equipment to be located within the mechanical/electrical room.

1.53 RED ZONE MEETING

Approximately 42 days prior to anticipated furniture installation, the Contractor and the Government's project delivery team will conduct what is known as the Red Zone Meeting to discuss the close-out process, to schedule the events and review responsibilities for actions necessary to produce a timely physical, as well as fiscal, project close-out. The Red Zone meeting derives its name from the football term used to describe the team effort to move the ball the last 20 yards into the end zone. The close-out of a construction project sometimes can be equally as hard and most definitely requires the whole team's efforts.

1.54 RESTRICTED ACCESS TO WICKHAM AVENUE (NOT USED)

1.55 DIGGING/EXCAVATION PERMITS

Contractor shall notify the Wisconsin Diggers Hotline at 811 or 1-800-242-8511 at least 3 working days prior to beginning excavation work. Contractor shall also coordinate with Fort McCoy to verify that post utilities have been located and obtain a digging permit if one is required.

1.56 VARIATIONS IN ESTIMATED QUANTITIES - SUBDIVIDED ITEMS (MAR 1995) EFARS 52.211-5001. (NOT USED)

27 Jan 2010

1.57 PARTNERING

August 1996

In order to most effectively accomplish this contract, the Government proposes to form a partnership with the Contractor to develop a cohesive building team. It is anticipated that this partnership would involve the Corps of Engineers, Representatives from Ft McCoy, the Contractor, primary subcontractors and the designers. This partnership would strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership would be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs.

1.58 ACTIVITY ENVIRONMENTAL ANALYSIS (NOT USED)

1 February 1995

1.59 PROGRESS PHOTOGRAPHS

July 2005

Version 1: The Contractor shall furnish digital photos (on CD-ROM) depicting the progress of the work during construction and, after final inspection by the Contracting Officer, of the conditions at the completion of the contract.

The monthly photography shall be performed between the first and fifth of each month, and the CD's, with digital photos, delivered no later than the 10th of each month taken. A minimum of six views from different positions shall be taken as directed to show, inasmuch as possible, work accomplished during the previous month, and a minimum of six views shall be taken of the completed work. Additional views and positions may be required by the Contracting Officer to depict the work done.

Photos shall be at least 4 megapixels and in JPEG format. Each CD shall be identified with the date made, contract title and number, location of work, as well as a brief description of work depicted.

Two sets of CD's shall be made with one set delivered to:

Contracting Officer

and the second set mailed, with a copy of the transmittal memo sent to the Contracting Officer, to:

US Army Corps of Engineers, Louisville District
CELRL-ED-AE Tom Walker
600 Dr. Martin Luther King Pl.
Louisville, KY 40202

No separate payment will be made for these services and all costs in connection thereto shall be considered a subsidiary obligation of the Contractor.

1.60 DAMAGE TO WORK (LRL) (NOT USED)

15 June 1990

1.61 SPECIAL CONTINUING CONTRACT CLAUSE 52.232-5003 (NOT USED)

28 January 2010

1.62 INCREMENTAL FUNDING CLAUSE 52.232-5004 (NOT USED)

27 January 2010

1.63 OBSTRUCTION OF NAVIGABLE WATERWAYS (DEC 1991) DFARS 252.236-7002.

27 January 2010

a. The Contractor shall:

1. Promptly recover and remove any material, plant, machinery, or appliance which the Contractor loses, dumps, throws overboard, sinks, or misplaces, and which, in the opinion of the Contracting Officer, may be dangerous to or obstruct navigation;

2. Give immediate notice, with description and locations of any such obstructions until the same are removed.

3. When required by the Contracting Officer, mark or buoy such obstructions until the same are removed.

b. The Contracting Officer may:

1. Remove the obstructions by contract or otherwise should the Contractor refuse, neglect, or delay compliance with paragraph a. above of this clause; and

2. Deduct the cost of removal from any monies due or to become due to the Contractor; or

3. Recover the cost of removal under the Contractor's bond.

c. The Contractor's liability for the removal of a vessel wrecked or sunk without fault or negligence is limited to that provided in Sections 15, 19, and 20 of River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et.seq.).

1.64 SIGNAL LIGHTS (NOT USED)

15 June 1990

1.65 LAKE OPERATION (NOT USED)

1.66 PROPOSED BETTERMENTS

15 May 2008

a. The minimum requirements of the contract are identified in the Request for Proposal. All betterments offered in the proposal become a requirement of the awarded contract.

b. "Betterment" is defined as any component or system which exceeds the minimum requirements stated in the Request for Proposal. This includes all proposed betterments listed in accordance with Submittal Requirements of Section 00100 of the Proposal, and all Government identified betterments.

c. "Government identified betterments" include the betterments identified on the "List of Accepted Project Betterments" prepared by the Proposal Evaluation Board and made a part of the contract by alteration, and all other betterments identified in the accepted Proposal after award.

1.67 SEQUENCE OF DESIGN/CONSTRUCTION

June 2009

Version 2

FAST TRACK DESIGN SEQUENCE

(a) The Contractor must submit for Government Acceptance a design Quality Control Plan in accordance with LRL Section 01 45 04.10 06, CONTRACTOR QUALITY CONTROL, Paragraph Design Quality Control Plan, before design may proceed.

(b) After receipt of Notice to Proceed (NTP), the Contractor shall initiate design, comply with all design submission requirements as covered under Division 01 General Requirements, and obtain Government review of each submission. The Contractor may begin construction on portions of the work for which the Government has reviewed the final design submission, all Government required revisions have been completed, revised documents have been resubmitted and are deemed satisfactory by the Government. The ACO or COR will notify the Contractor by letter when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the ACO or COR, the initial submission failed to meet the minimum quality requirements as set forth in the Contract.

(c) No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

1.68 (NOT USED)

1.69 KEY PERSONNEL, SUBCONTRACTORS AND OUTSIDE ASSOCIATES OR CONSULTANTS

17 August 1998

In connection with the services covered by this contract, any in-house personnel, subcontractors, and outside associates or consultants will be limited to individuals or firms that were specifically identified and agreed to during negotiations. The Contractor shall obtain the Contracting Officer's written consent before making any substitution for these designated in-house personnel, subcontractors, associates, or consultants.

1.70 REGISTRATION OF DESIGNERS (JUN 2003) FAR 52.236-25

1.70.1 Requirements for Registration of Designers 19 October 2007

Architects or engineers registered to practice in the particular professional field involved in a State, the District of Columbia, or an outlying area of the United States shall prepare or review and approve the design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work.

1.70.2 Additional Requirements/Clarifications for the Registration of Designers

The design of architectural, structural, mechanical, electrical, civil, fire protection, geotechnical, interior design, information technology, or other engineering features of the work shall be accomplished or reviewed and approved by designers registered/licensed to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico, or in the District of Columbia. Each final design submittal drawing and certified final drawings ready for construction shall be signed and sealed by the registered professional (Designer of Record) responsible for the design indicated on the particular sealed sheet.

1.71 DESIGN/BUILD CONTRACT—ORDER OF PRECEDENCE 17 August 1998

a. The contract includes the standard contract clauses and schedules current at the time of contract award. It entails (1) the solicitation in its entirety, including all drawings, cuts, and illustrations, and any amendments, and (2) the successful offeror's accepted proposal. The contract constitutes and defines the entire agreement between the Contractor and the Government. No documentation shall be omitted which in any way bears upon the terms of that agreement.

b. In the event of conflict or inconsistency between any of the provisions of this contract, precedence shall be given in the following order:

1. Betterments: Any portions of the accepted proposal which both conform to and exceed the provisions of the solicitation.

2. The provisions of the solicitations. (See also contract Clause: SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION.)

3. All other provisions of the accepted proposal.

4. Any design products including, but not limited to, plans, specifications, engineering studies and analyses, shop drawings, equipment installation drawings, etc. These are "deliverables" under the contract and are not part of the contract itself. Design products must conform with all provisions of the contract, in the order of precedence herein.

1.72 DESIGN CONFERENCES 17 August 1998

a. Pre-Work: As part of the Pre-work meeting conducted after contract award, key representatives of the Government and the Contractor will review the design submission and review procedures specified herein, discuss the preliminary design schedule and provisions for phase completion of the D/B documents with construction activities (fast tracking), as appropriate, meet with Corps of Engineers Design Review personnel and key Using Agency points of contact and any other appropriate pre-design discussion items.

b. Design Charette: After award of the contract, the Contractor shall visit the site and conduct extensive interviews, and problem solving discussions with the individual users, base personnel, Corps of Engineers personnel to acquire all necessary site information, review user operations, and discuss user needs. The Contractor shall document all discussions. The design shall be finalized as direct result of these meetings.

c. Design Review Conferences: Review conferences will be held on base for each design for each submittal. The Contractor shall bring the personnel that developed the design submittal to the review conference. The conferences will take place the week after the review is complete.

1.73 RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN (Rev. MAY 2002)

a. The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other non-construction services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiency in its designs, drawings, specifications, and other non-construction services and perform any necessary rework or modifications, including any damage to real or personal property, resulting from the design error or omission.

b. The standard of care for all design services performed under this agreement shall be the care and skill ordinarily used by members of the architectural or engineering professions practicing under similar conditions at the same time and locality. Notwithstanding the above, in the event that the contract specifies that portions of the Work be performed in accordance with a performance standard, the design services shall be performed so as to achieve such standards.

c. Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract. The Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of these services furnished under this contract.

d. The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

e. If the Contractor is comprised of more than one legal entity, each entity shall be jointly and severally liable hereunder.

1.74 WARRANTY OF DESIGN (FIRM-FIXED PRICE DESIGN-BUILD CONTRACT)

January 2010

a. The Contractor warrants that the design shall be performed in accordance with the Contract requirements. Design and design related construction not conforming to the Contract requirements shall be corrected at no additional cost to the Government. The standard of care for design is defined in paragraph (b) of Special Contract Requirement "RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN".

b. The period of this warranty shall commence upon final completion and the Government's acceptance of the work, or in the case of the Government's beneficial occupancy of all or part of the work for its convenience, prior to final completion and acceptance, at the time of such occupancy.

c. This design warranty shall be effective from the above event through the Statute of Limitations and Statute of Repose, as applicable to the state that the project is located in.

d. The rights and remedies of the Government provided for under this clause are in addition to any other rights and remedies provided in this contract or by law.

1.75 CONSTRUCTOR'S ROLE DURING DESIGN

JUN 1998

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this contract. In addition to the typical required construction activities, the constructor's involvement includes, but is not limited to actions such as: integrating the design schedule into the Master Schedule to maximize the effectiveness of fast-tracking design and construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules, effectively interfacing the construction QC program with the design QC program, and maintaining and providing the design team with accurate, up-to-date redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities.

1.76 VALUE ENGINEERING AFTER AWARD

JUN 1999

a. In reference to Contract Clause 52.248-3, "Value Engineering - Construction", the Government may refuse to entertain a "Value Engineering Change Proposal" (VECP) for those "performance oriented" aspects of the Solicitation documents which were addressed in the Contractor's accepted contract proposal and which were evaluated in competition with other offerors for award of this contract.

b. The Government may consider a VECP for those "prescriptive" aspects of the Solicitation documents, not addressed in the Contractor's accepted contract proposal or addressed but evaluated only for minimum conformance with the Solicitation requirements.

c. For purposes of this clause, the term "performance oriented" refers to those aspects of the design criteria or other contract requirements which allow the Offeror or Contractor certain latitude, choice of and flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction approach or other approach to fulfill the contract requirements. Such requirements generally tend to be expressed in terms of functions to be performed, performance required or essential physical characteristics, without dictating a specific process or specific design solution for achieving the desired result.

d. In contrast, for purposes of this clause, the term "prescriptive" refers to those aspects of the design criteria or other Solicitation requirements wherein the Government expressed the design solution or other requirements in terms of specific materials, approaches, systems and/or processes to be used. Prescriptive aspects typically allow the Offerors little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

1.77 DEVIATING FROM THE ACCEPTED DESIGN

JUN 2002

- a. The Contractor must obtain the approval of the Designer of Record and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed and Government reviewed and concurred design, before proceeding with the revision.
- b. The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.
- c. Any revision to the design, which deviates from the contract requirements (i.e., the RFP and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision.
- d. Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense.
- e. The Contractor shall track all approved revisions to the reviewed and accepted design and shall incorporate them into the as-built design documentation, in accordance with agreed procedures. The Designer of Record shall document its professional concurrence on the as-builts for any revisions in the stamped and sealed drawings and specifications.

1.78 GOVERNMENT-FURNISHED RFP DRAWINGS, SURVEYS AND SPECIFICATIONS

JAN 2010

This is to clarify that contract clause 252.236-7001, "Contract Drawings and Specifications", refers to any Government-furnished design or design criteria included in the Request for Proposal (RFP).

1.79 FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements state here. Remove stains, foreign substances, and temporary labels from surfaces. Vacuum carpet and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of operating equipment if cleaning isn't possible or practicable. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences and construction facilities. A list of completed clean-up items shall be submitted on the day of final inspection.

1.80 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (NOT USED)

August 2005

1.81 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

August 2005

In accordance with the National Pollutant Discharge Elimination System (NPDES) Permit, a Storm Water Pollution Prevention Plan (SWPPP) is required for this project. This plan shall be developed by the Contractor as part of the design process and must meet the erosion and sediment control requirements for the State of WI. The plan must identify the controls that will be used and include design, inspection, and maintenance information. A site plan with the existing and proposed grading shall be included, showing the controls being utilized. The permanent stabilization practices (permanent seeding, mulching, sodding, plants, erosion control blanket, riprap, etc.) should be shown on the final grading plan, with temporary controls (temporary gravel construction entrance/exit, silt

fences, straw bales, temporary diversions, sediment basins or traps, etc.) shown on the existing grading plan. Use of straw bales alone is not considered an effective method of sediment control. Prior to the start of construction, the Contractor shall submit the SWPPP to the Contracting Officer for review and acceptance. The SWPPP must address compliance with all State laws regarding historic preservation and endangered species with State Letters attached. Once the SWPPP is approved by the Contracting Officer, the NOI will be prepared by the Contractor, utilizing information contained in the approved SWPPP. A Notice of Intent (NOI) will be forwarded to the State by the Contractor. Commencement/start of construction (ground disturbing activity) by the Contractor shall not begin prior to the NPDES permit and letter for compliance being received. A copy of both the SWPPP and NPDES Permit must be kept at the construction site. Note, the SWPPP is a part of the total Pollution Prevention Plan that the Contractor is responsible for preparing in accordance with Specification Section 01 57 20.00 10 ENVIRONMENTAL PROTECTION.

1.82 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (NOT USED)

August 2005

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

**SECTION 01 10 00
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1.0 PROJECT OBJECTIVES

The project objective is to design and construct facilities for the military that are consistent with the design and construction practices used for civilian sector projects that perform similar functions to the military projects. For example, a Company Operations Facility has the similar function as an office/warehouse in the civilian sector; therefore the design and construction practices for a company operations facility should be consistent with the design and construction of an office/warehouse building.

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
Ft McCoy Information Systems Facility	Communications Network Facility

It is the Army's objective that these buildings will have a 25-year useful design life before a possible re-use/re-purpose or renovation requirement, to include normal sustainment, restoration, modernization activities and a 50-year building replacement life. Therefore, the design and construction should provide an appropriate level of quality to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project OWNER. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles.

The project site should be developed for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole.

Requirements stated in this contract are minimums. Innovative, creative, and life cycle cost effective solutions, which meet or exceed these requirements are encouraged. Further, the OFFEROR is encouraged to seek solutions that will expedite construction (panelization, pre-engineered, etc.) and shorten the schedule. **The intent of the Government is to emphasize the placement of funds into functional/operational requirements. Materials and methods should reflect this by choosing the lowest Type of Construction allowed by code for this occupancy/project allowing the funding to be reflected in the quality of interior/exterior finishes and systems selected.**

1.1. SECTION ORGANIZATION

This Section is organized under 6 major "paragraphs".

- (1) Paragraph 1 is intended to define the project objectives and to provide a comparison between the military facility(ies) and comparable "civilian" type buildings.
- (2) Paragraph 2 describes the scope of the project.
- (3) Paragraph 3 provides the functional, operational and facility specific design criteria for the specific facility type(s) included in this contract or task order.
- (4) Paragraph 4 lists applicable industry and government design criteria, generally applicable to all facility types, unless otherwise indicated in the Section. It is not intended to be all-inclusive. Other industry and government standards may also be used, where necessary to produce professional designs, unless they conflict with those listed.
- (5) Paragraph 5 contains Army Standard Design Criteria, generally applicable to all facility types, unless otherwise indicated in the Section.
- (6) Paragraph 6 contains installation and project specific criteria supplementing the other 5 paragraphs.

2.2. SITE:

Provide all site improvements necessary to support the new building facilities. Refer to Paragraph 6.

Approximate area available 7.00 acres

2.3. GOVERNMENT-FURNISHED GOVERNMENT-INSTALLED EQUIPMENT (GFGI)

Coordinate with Government on GFGI item requirements and provide suitable structural support, brackets for projectors/VCRs/TVs, all utility connections and space with required clearances for all GFGI items. Fire extinguishers are GF/GI personal property, while fire extinguisher brackets and cabinets are Contractor furnished and installed CF/CI. All Computers and related hardware, copiers, faxes, printers, video projectors, VCRs and TVs are GFGI.

The following are also GFGI items: Communications Equipment and IDS System

2.4. FURNITURE REQUIREMENTS

Provide furniture design for all spaces listed in Chapter 3 and including any existing furniture and equipment to be re-used. Coordinate with the user to define requirements for furniture systems, movable furniture, storage systems, equipment, any existing items to be reused, etc. Early coordination of furniture design is required for a complete and usable facility.

The procurement and installation of furniture is NOT included in this contract. Furniture will be provided and installed under a separate furniture vendor/installer contract. The general contractor shall accommodate that effort with allowance for entry of the furniture vendor/installer onto this project site at the appropriate time to permit completion of the furniture installation for a complete and usable facility to coincide with the Beneficial Occupancy Date (BOD) of this project. The furniture vendor/installer contract will include all electrical pre-wiring and the whips for final connection to the building electrical systems however; the general contractor shall make the final connections to the building electrical systems under this contract. Furthermore, the general contractor shall provide all Information/Technology (IT) wiring (i.e. LAN, phone, etc.) up to and including the face plate of all freestanding and/or systems furniture desk tops as applicable, the services to install the cable and face plates in the furniture, the coordination with the furniture vendor/installer to accomplish the installation at the appropriate time, and all the final IT connections to the building systems under this contract.

The Government reserves the right to change the method for procurement of and installation of furniture to Contractor Furnished/Contractor Installed (CF/CI). CF/CI furniture will require competitive open market procurement by the Contractor using the Furniture, Fixtures and Equipment (FF&E) package.

2.5. NOT USED

3.0 Directorate of Information Management Facility (DOIM)

3.1 GENERAL: Construct a one-story Army Information Systems Facility that will house administrative offices, NIPRNET Data Center, SIPRNET Data Center, conference/training rooms, and other building support functions. The DOIM Facility spaces are those typically found in Armed Forces ISF facilities: lobby, offices, conference rooms, desktop/system support, technicians, network ops, NSD room, test lab, information assurance, service management, NIPRNET Data Center, SIPRNET Data Center, SIPRNET Café, storage, staging, supply office, TER room, break room, and building and personnel support spaces such as toilets, janitor, riser room, mechanical, electrical, EF, circulation, etc. This facility will serve as the primary IT support facility of nearly 1300 buildings on the Ft McCoy installation. General Construction of the DOIM Facility largely follows US Army Design System standards and I3MP Guide, with some modifications for Design/Build procurement.

3.1.1 BUILDING AREA: The DOIM facility is a unique facility type square foot requirements have been established based on User input for the IT spaces and general use of the Army Design Guide UFC 4-171-05.

3.1.2 DESIGN FREEDOM: Conceptual standard design floor plans are included to establish net square footage, functional adjacencies and arrangements that have been developed to meet User operability requirements. For example, it is anticipated that in some cases additional spaces have been programmed in addition to those standard spaces based on User and installation requirements. Modifications to the indicated building plans are possible as long as the established minimum areas, adjacencies, and operability requirements are maintained. Government provided conceptual floor plans do not relieve the contractor in any way to any of the requirements in the RFP, including but not limited to current life safety and building code requirements, and all other applicable criteria (refer to Chapter 4).

3.1.3 DESIGN OBJECTIVES AND CONSIDERATIONS: Design and construction shall comply with the requirements contained herein. This facility shall be designed for a life expectancy of not less than 25 years. This document establishes the minimum standards for design and construction quality. A floor plan has been included in this document, but improvements to that plan based upon detailed discussions with the customer are encouraged, as are innovative, creative, or cost saving proposals which meet or exceed these requirements. The enclosed floor plan is provided primarily to communicate desired space relationships and establish minimum room sizes. Actual room sizes shall be no less than 90% of the net area suggested on the enclosed floor plan. Select materials, equipment and construction methods that provide overall economy consistent with architectural and engineering practice. The level of local technology shall be considered with respect to construction, operation and maintenance of the facility. Conflict between this document and local standards shall be brought to the attention of the Government for Resolution.

3.1.4 SUSTAINIBILITY: This project is required to achieve a minimum LEED Silver certification (refer to Chapter 6, section 6.14)

3.1.5 SITE LAYOUT: A generic conceptual site layout is also provided with annotations to establish guidelines for site placement of the facility in relation to other site features and amenities. Site layout must meet current applicable Antiterrorism/Force Protection (AT/FP) requirements and installation specific threat levels and requirements.

3.1.6 BUILDING OCCUPANCY CLASSIFICATION: B-Business (IBC)

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3.1.7 HANDICAPPED ACCESS: Accessibility must be provided in accordance with Uniform Federal Accessibility Standards (UFAS) and with the Americans with Disabilities Act Accessibility Guidelines) ADAAG) when ADAAG provides equal or greater accessibility than UFAS.

3.1.8 FACILITY TECHNICAL REQUIREMENTS: Refer to chapter 5.

3.2 FACILITY SPECIFIC CRITERIA: Refer to chapter 6.

3.2.1 FURNITURE AND EQUIPMENT LAYOUT: All furniture requirements should follow the direction of the current version of UFC 4-171-05. The furniture shown on plan provided with this document is a preliminary layout and is provided for reference only. Refer to all requirements as listed in the UFC for coordination during the design phase. Coordinate all requirements with the UFC and the Louisville Corps of Engineers Interior Designers. There are a few exceptions to the guidelines within the UFC. See Table 3.1 for additional requirements.

The Front Office Area and Operations Area are to be treated as two zones for controlling access and sizing restrooms.

The following table breaks out 9 functional use spaces.

1. Front Office Area
2. Data Center
3. Operations Area
4. Operations Access Area
5. Storage/Receiving Area
6. User Support Spaces
7. Support Spaces
8. Circulation
9. Structural

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Table 3.1 Functional Space Relationship and Additional Requirements

ROOM # CONCEPT PLAN A-1.1	FUNCTIONAL SPACES	ESTIMATED OCCUPANTS	ROOM (SF) BREAK DOWN	SPACE RELATIONSHIP & ADDITIONAL REQUIREMENTS
	1. Front Office Area			Front office area spaces are intended to be separate from other operations in facility. Provide control access at pair of doors between front office area and operations area.
105	Director's Office	1	198	Provide small conference table and seating.
104	Deputy Director	1	149	Locate near Director's Office.
102	Admin Support	2	321	Provide two workstations for Admin Support and a task chair at counter.
103	Waiting Area	5	106	Provide 1 each power/comm/cable outlets for flat screen TV monitors on wall. Monitors are GFGI coordinate location with end users.
101	Lobby	6	276	Provide 1 each power/comm/cable outlets for flat screen TV monitors on wall. Monitors are GFGI coordinate location with end users.
113	Conference Room 1	25	337	Conference Room 1 and Conference Training Room will be used by general public for scheduled public meetings as well as various installation training. These rooms should be near the main front entry and lobby area. Provide typical conference room furniture per UFC for 113. Provide training style tables that can be reconfigured into a conference room function in 114. Provide in each conference room 2 power/comm/cable outlets for flat screen TV monitors on walls. Monitors are GFGI coordinate location with end users.
114	Conference/Training Room	40	586	

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ROOM # CONCEPT PLAN A-1.1	FUNCTIONAL SPACES	ESTIMATED OCCUPANTS	ROOM (SF) BREAK DOWN	SPACE RELATIONSHIP & ADDITIONAL REQUIREMENTS
106	Conference Room 2	22	325	Provide typical conference room furniture per UFC. Provide 2 each power/comm/cable outlets for flat screen TV monitors on wall. Monitors are GFGI coordinate location with end users.
111	Women's Rest Room		190	Rest Rooms are to be 50/50 women/men Ratio. Rest Rooms' fixtures numbers to accommodate occupant surge, i.e. rooms 113 & 114 used for 65+ persons plus front office daily use. Separate restrooms shall serve the occupants in the operations area.
114	Men's Rest Room		189	
107	Telephone Technicians	6	520	Telephone technicians & operators do not need frequent access to operations area; therefore locate adjacent front office area.
110	Telephone Operators	3	300	
	2. Data Center			Locate data center in central core of facility of operations area. Do not locate any walls on exterior walls. Provide 2 hour rated construction around data center. Rated wall assembly shall achieve both fire rating & Min. STC-50.
139	NIPRNET Data Center		2140	Provide non-rated walls that min STC-50 within data center between NIPRNET, SIPRNET Data & SIPRNET Café per AR-380-5.
140	SIPRNET Data Center		392	Fence Comm Sec with personal gate in corner of SIPRNET Data Center. Provide small computer desk and chair in Comm Sec area.
141	SIPRNET Café	12	381	Provide computer desk and chairs per UFC
137	UPS Room		303	UPS Room shall be 1 hour rated walls.

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ROOM # CONCEPT PLAN A-1.1	FUNCTIONAL SPACES	ESTIMATED OCCUPANTS	ROOM (SF) BREAK DOWN	SPACE RELATIONSHIP & ADDITIONAL REQUIREMENTS
	3. Operations Area			Operation area spaces are intended to be adjacent to data center. Operations area is required to have separate entry from main lobby entry.
115	Information Assurance	6	630	*Info Assurance; NSD & Desktop/Sys Support areas shall flow together & do not require doors between spaces. Coordination with end users is required in these spaces for furniture requirements. Type of modular work stations are not defined in the UFC; however each space, Info Assurance, NSD & Desktop/Sys Support, will be required to accommodate the number of occupants indicated.
116	Assurance Manager	1	130	Locate in area of Information Assurance.
117	Information Div Chief	1	127	Locate in area of Information Assurance.
119	NSD Room	14	1067	* See Note Above
120	NSD Div Chief	1	130	Locate in area of NSD area.
122	Desktop/Systems Support	14	1086	* See Note Above
121	Desktop/Sys DN Chief	1	127	Locate in area of Desktop/Sys Support Area.
142	Service Management	13	1167	Locate Service Management adjacent to above spaces; however not required to be in flow of * spaces.
143	Service Mgt Div Chief	1	146	Locate in area of Service Management area.
123	Test Lab		315	Provide workbenches and steel shelving along walls in test lab.

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ROOM # CONCEPT PLAN A-1.1	FUNCTIONAL SPACES	ESTIMATED OCCUPANTS	ROOM (SF) BREAK DOWN	SPACE RELATIONSHIP & ADDITIONAL REQUIREMENTS
118	Network Operations		315	Provide small conference table with chairs. Provide 3 each power/comm/cable outlets for flat screen TV monitors on walls. Monitors are GFGI coordinate location with end users.
	4. Operations Access			Provide controlled access between Service Desk, Walk-up & Operation area.
125	Service Desk	10	55	Locate Service Desk & Walk-up adjacent to operation area. Provide task chair at service desk counter and small computer desk and chairs similar to SIPRNET Café requirements.
124	Walk-Up Room	1	221	
	5. Storage/Receiving Area			
127	Storage		1172	Locate Storage Receiving Area & Support, i.e. staging & supply office away from front office area. Prefer to be adjacent to operation area.
128	Staging		188	
129	Supply Office	2	225	
	6. User Support Spaces			
132	Break Room	12	451	Break Room will be used by FTE of Facility. Break Room is not open to public. Provide 1 each power/comm/cable outlets for flat screen TV monitor on wall. Monitors are GFGI coordinate location with end users.
135	Women's Restroom		181	Rest Rooms are sized for Operations Area approx. 65+ and are not open to public.
136	Men's Restroom		179	

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ROOM # CONCEPT PLAN A-1.1	FUNCTIONAL SPACES	ESTIMATED OCCUPANTS	ROOM (SF) BREAK DOWN	SPACE RELATIONSHIP & ADDITIONAL REQUIREMENTS
	Janitor		86	Provide shelving for janitorial supplies
	7. Support Spaces			
133	Electrical Room		323	Main Electrical Room shall be located on exterior wall with exterior access. A second exit is required & walls shall meet 1 hour rated wall assemblies. Secondary Electrical Room shall be located appropriate distance away from main Electrical room & may not require rated wall assemblies. Walls around shall be full height, ceilings not required.
109	Electrical Room		67	
138	Mechanical Room		1474	Locate Mechanical Room on exterior wall with adequate number of doors for exterior access.
130	Riser Room		80	Riser Room shall be located on exterior wall with exterior access. Walls shall be full height and ceilings are not required.
134	TER		192	Locate TER appropriate distances from (EF) so comm runs do not exceed 290' from end to end. Walls shall be full height and ceilings are not required.
	(EF) Entrance Facility		77	(EF) shall be located on exterior wall with exterior access. Walls shall be full height and ceilings are not required.
	8. Circulation			
144	Corridor		639	Provide controlled access at Corridors between Front Office Area & Operations Area. Provide controlled access between operations Area & Service Desk Area.
145	Corridor		1334	
146	Corridor		138	

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ROOM # CONCEPT PLAN A-1.1	FUNCTIONAL SPACES	ESTIMATED OCCUPANTS	ROOM (SF) BREAK DOWN	SPACE RELATIONSHIP & ADDITIONAL REQUIREMENTS
147	Corridor		447	Emergency exits other than two entries with vestibules are to be alarmed "Emergency Exits Only". These exits are not required to have Vestibules & Walk Off Mats. Prefer Corridors provide central access flow to all spaces as indicated on Concept Plan A-1.1.
100	Vestibule		111	
126	Vestibule		92	
	9. Structural		1493	
	1391 Gross SF = 21,390		Concept Plan SF = 21,178	

4.0 APPLICABLE CRITERIA

Unless a specific document version or date is indicated, use criteria from the most current references as of the date of issue of the contract or task order, including any applicable addenda, unless otherwise stated in the task order. In the event of conflict between References and/or Applicable Military Criteria, apply the most stringent requirement, unless otherwise specifically noted in the contract or task order.

4.1. INDUSTRY CRITERIA

Applicable design and construction criteria references are listed in Table 1 below. This list is not intended to include all criteria that may apply or to restrict design and construction to only those references listed. See also Paragraph 3 for additional facility-specific applicable criteria.

Table 1: Industry Criteria

Air Conditioning and Refrigeration Institute (ARI)	
ARI 310/380	Packaged Terminal Air-Conditioners and Heat Pumps
ARI 440	Room Fan-Coil and Unit Ventilator
ANSI/ARI 430-99	Central Station Air Handling Units
ARI 445	Room Air-Induction Units
ARI 880	Air Terminals
Air Movement and Control Association (AMCA)	
AMCA 210	Laboratory Methods of Testing Fans for Rating
American Architectural Manufacturers Association (AAMA)	
AAMA 605	Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
AAMA 607.1	Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
AAMA 1503	Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections
American Association of State Highway and Transportation Officials (AASHTO)	
	Roadside Design Guide [guardrails, roadside safety devices]
	Standard Specifications for Transportation Materials and Methods of Sampling and Testing [Road Construction Materials]

	Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
	Guide for Design of Pavement Structures, Volumes 1 and 2 [pavement design guide]
	A Policy of Geometric Design of Highways and Streets
American Bearing Manufacturers Association (AFBMA)	
AFBMA Std. 9	Load Ratings and Fatigue Life for Ball Bearings
AFBMA Std. 11	Load Ratings and Fatigue Life for Roller Bearings
American Boiler Manufacturers Association (ABMA)	
ABMA ISEI	Industry Standards and Engineering Information
American Concrete Institute	
ACI 302.2R	Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-66	ACI Detailing Manual
ACI 530	Building Code Requirements for Masonry Structures
ADA Standards for Accessible Design	
See US Access Board	ADA and ABA Accessibility Guidelines for Buildings and Facilities, Chapters 3-10.
American Institute of Steel Construction (AISC)	
	Manual of Steel Construction – 13 th Edition (or latest version)
American Iron and Steel Institute	
AISI S100	North American Specification for the Design of Cold-Formed Steel Structural Members
American National Standards Institute 11 (ANSI)	

ANSI Z21.10.1	Gas Water Heaters Vol. 1, Storage water Heaters with Input Ratings of 75,000 Btu per Hour or less
ANSI Z124.3	American National Standard for Plastic Lavatories
ANSI Z124.6	Plastic Sinks
ANSI Z21.45	Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
ANSI/IEEE C2-2007	National Electrical Safety Code
ANSI/AF&PA NDS-2001	National Design Specification for Wood Construction
American Society of Civil Engineers (ASCE)	
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASCE 37	Design and Construction of Sanitary and Storm Sewers, Manuals and Reports on Engineering Practice [sanitary sewer and storm drain design criteria]
ASCE/SEI 31-03	Seismic Evaluation of Existing Buildings [Existing Building Alteration/Renovation]
ASCE/SEI 41-06	Seismic Rehabilitation of Existing Buildings [Existing Building Alteration/Renovation]
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)	
ASHRAE 90.1	ANSI/ASHRAE/IESNA 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Guideline 0	The Commissioning Process
ASHRAE Guideline 1.1	The HVAC Commissioning Process
ASHRAE Handbooks	Fundamentals, HVAC Applications, Systems and Equipment, Refrigeration (Applicable, except as otherwise specified)
ASHRAE Standard 15	Safety Standard for Refrigeration Systems
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy (Design portion is applicable)

American Society of Mechanical Engineers International (ASME)	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
American Water Works Association (AWWA)	
	Standards [standards for water line materials and construction]
American Welding Society	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
Architectural Woodwork Institute (AWI)	
Version 1.2	AWI Quality Standards 7th Edition
Associated Air Balance Council (AABC)	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems
	AABC Associated Air Balance Council Testing and Balance Procedures
ASTM International	
ASTM C1060-90(1997)	Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 779 (2003)	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E1827-96(2002)	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
Builders Hardware Manufacturers Association (BHMA)	
ANSI/BHMA	American National Standards for Builders Hardware

Building Industry Consulting Service International	
	Telecommunications Distribution Methods Manual (TDMM)
	Customer-Owned Outside Plant Design Manual (CO-OSP)
Code of Federal Regulations (CFR)	
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
10 CFR 430	Energy Conservation Program for Consumer Products
Consumer Electronics Association	
CEA 709.1B	Control Network Protocol Specification
CEA 709.3	Free-Topology Twisted-Pair Channel Specification
CEA 852	Tunneling Component Network Protocols Over Internet Protocol Channels
Electronic Industries Association (EIA)	
ANSI/EIA/TIA 568	Structured Cabling Series
ANSI/EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces (includes ADDENDA)
ANSI/TIA/EIA-606	Administrative Standard for the Telecommunications Infrastructure of Commercial Buildings
J-STD EIA/TIA 607	Commercial Building Grounding and Bonding Requirements for Telecommunications
Federal Highway Administration (FHWA)	
	Manual on Uniform Traffic Control Devices for Streets and Highways [signage and pavement markings for streets and highways]
FHWA-NHI-01-021	Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL
Illuminating Engineering Society of North America (IESNA)	
IESNA RP-1	Office Lighting

IESNA RP-8	Roadway Lighting
IESNA Lighting Handbook	Reference and Application
Institute of Electrical and Electronics Engineers Inc. (IEEE)	
	Standard for Use of the International System of Units (SI): the Modern Metric System
Standard 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
International Code Council (ICC)	
IBC	<p>International Building Code</p> <p>Note: All references in the International Building Code to the International Electrical Code shall be considered to be references to NFPA 70.</p> <p>All references in the International Building Code to the International Fuel Gas Code shall be considered to be references to NFPA 54 and NFPA 58.</p> <p>All references in the International Building Code to the International Fire Code and Chapter 9 shall be considered to be references to Unified Facilities Criteria (UFC) 3-600-01.</p>
IMC	<p>International Mechanical Code –</p> <p>Note: For all references to “HEATING AND COOLING LOAD CALCULATIONS”, follow ASHRAE 90.1</p> <p>Note: For all references to “VENTILATION”, follow ASHRAE 62.1</p>
IRC	International Residential Code
IPC	International Plumbing Code
IEC	Energy Conservation Code (IEC) –Applicable only to the extent specifically referenced herein. Refer to Paragraph 5, ENERGY CONSERVATION requirements.
IGC	International Gas Code - not applicable. Follow NFPA 54, National Fuel Gas Code and NFPA 58, Liquefied Petroleum Gas Code.
International Organization for Standardization (ISO)	
ISO 6781:1983	Qualitative detection of thermal irregularities in building envelopes –

	infrared method
LonMark International (LonMark)	
LonMark Interoperability Guidelines	(available at www.lonmark.org), including: Application Layer Guidelines, Layer 1-6 Guidelines, and External Interface File (XIF) Reference Guide
LonMark Resource Files	(available at www.lonmark.org), including Standard Network Variable Type (SNVT) definitions
Metal Building Manufacturers Association (MBMA)	
	Metal Building Systems Manual
Midwest Insulation Contractors Association (MICA)	
	National Commercial and Industrial Insulation Standards Manual
National Association of Corrosion Engineers International (NACE)	
NACE RP0169	Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0185	Extruded, Polyolefin Resin Coating Systems with Adhesives for Underground or Submerged Pipe
NACE RP0285	Corrosion Control of Underground Storage Tank Systems by Cathodic Protection
NACE RP0286	Electrical Isolation of Cathodically Protected Pipelines
National Electrical Manufacturers Association (NEMA)	
National Environmental Balancing Bureau (NEBB)	
	Procedural Standards Procedural Standards for Testing Adjusting Balancing of Environmental Systems
National Fire Protection Association (NFPA)	
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 13	Installation of Sprinkler Systems
NFPA 13R	Residential Occupancies up to and Including Four Stories in Height Sprinkler Systems

NFPA 14	Standard for the Installation of Standpipes and Hose Systems
NFPA 20	Installation of Centrifugal Fire Pumps
NFPA 24 NFPA 25	Standard for the Installation of Private Fire Service Mains and Their Appurtenances [underground fire protection system design] Inspection, Testing And Maintenance Of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 30A	Motor Fuel Dispensing Facilities and Repair Garages
NFPA 31	Installation of Oil Burning Equipment
NFPA 54	National Fuel Gas Code
NFPA 58	Liquefied Petroleum Gas Code
NFPA 70	National Electrical Code
NFPA 72	National Fire Alarm Code
NFPA 76	Fire Protection of Telecommunications Facilities
NFPA 80	Standard for Fire Doors and Fire Windows
NFPA 90a	Installation of Air Conditioning and Ventilating Systems
NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
National Roofing Contractor's Association (NRCA)	
	Roofing and Waterproofing Manual
National Sanitation Foundation, International	
NSF/ANSI Std. 2, 3, 4, 5, 6, 7, 8, 12, 13, 18, 20, 21, 25, 29, 35, 36, 37, 51, 52, 59,	Food Equipment Standards

169	
ANSI/UL Std. 73, 197, 471, 621, 763	Food Equipment Standards
CSA Std. C22.2 No. 109, 120, 195	Food Equipment Standards
Occupational Safety and Health Administration (OSHA)	
Title 29, Part 1926	OSHA Construction Industry Standards, Title 29, Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction
Plumbing and Drainage Institute (PDI)	
PDI G 101	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data
PDI WH201	Water Hammer Arrestors
Precast Concrete Institute	
PCI Design Handbook	Precast and Prestressed Concrete
Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)	
SMACNA HVAC Duct Construction Standards	HVAC Duct Construction Standards - Metal and Flexible
SMACNA Architectural Manual	Architectural Sheet Metal Manual
SMACNA HVAC TAB	HVAC Systems - Testing, Adjusting and Balancing
State/Local Regulations	
	State Department of Transportation Standard Specifications for Highway and Bridge Construction
	Sedimentation and Erosion Control Design Requirements
	Environmental Control Requirements
	Storm Water Management Requirements
Steel Door Institute (SDI)	

ANSI A250.8/SDI 100	Standard Steel Doors and Frames
Steel Deck Institute	
	SDI Diaphragm Design Manual
Steel Joist Institute	
	Catalog of Standard Specifications and Load Tables for Steel Joists and Joist Girders
Underwriters Laboratories (UL)	
UL 96A	Installation Requirements for Lightning Protection Systems
UL 300	Standard for Safety for Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
UNITED STATES ACCESS BOARD: U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD	
ADA and ABA Accessibility Guidelines for Buildings and Facilities	<p>ABA Accessibility Standard for DoD Facilities</p> <p>Derived from the ADA and ABA Accessibility Guidelines: Specifically includes: ABA Chapters 1 and 2 and Chapters 3 through 10.</p> <p>Use this reference in lieu of IBC Chapter 11.</p> <p>Excluded are:</p> <p>(a) Facilities, or portions of facilities, on a military installation that are designed and constructed for use exclusively by able-bodied military personnel (See Paragraph 3 for any reference to this exclusion).</p> <p>(b) Reserve and National Guard facilities, or portions of such facilities, owned by or under the control of the Department of Defense, that are designed and constructed for use exclusively by able-bodied military personnel. (See paragraph 3 for any reference to this exclusion).</p>
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES	
	FDA National Food Code
U.S. GREEN BUILDING COUNCIL (USGBC)	
LEED-NC	Green Building Rating System for New Construction & Major Renovations
	Application Guide for Multiple Buildings and On-Campus Building Projects

4.2. MILITARY CRITERIA

The project shall conform to the following criteria. Certain design impacts and features due to these criteria are noted for the benefit of the offeror. However, all requirements of the referenced criteria will be applicable, whether noted or not, unless otherwise specified herein.

4.2.1. Energy Policy Act of 2005 (Public Law 109-58) (applies only to the extent specifically implemented in the contract, which may or may not directly cite or reference EPACT)

4.2.2. Executive Order 12770: Metric Usage In Federal Government

(a) Metric design and construction is required except when it increases construction cost. Offeror to determine most cost efficient system of measurement to be used for the project.

4.2.3. TB MED 530: Occupational and Environmental Health Food Sanitation

4.2.4. Unified Facilities Criteria (UFC) 3-410-01FA: Heating, Ventilating, and Air Conditioning - applicable only to the extent specified in paragraph 5, herein.

4.2.5. Deleted.

4.2.6. UFC 3-600-01 Design: Fire Protection Engineering for Facilities. Use the latest edition of the IBC in coordination with this UFC. Use Chapters 3, 6, 7, 33 and UFC 3-600-01. If any conflict occurs between these Chapters and UFC 3-600-01, the requirements of UFC 3-600-01 take precedence. Use UFC 3-600-01 in lieu of IBC Chapters 4, 8,9,10.

4.2.7. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings

4.2.8. UFC 4-023-03 Design of Buildings to Resist Progressive Collapse (Use most recent version, regardless of references thereto in other publications)

(a) Note the option to use tie force method or alternate path design for Occupancy Category II.

4.2.9. UFC 4-021-01 Design and O&M: Mass Notification Systems

4.2.10. Technical Criteria for Installation Information Infrastructure Architecture (I3A)

(a) Email: DetrickISECI3Aguide@conus.army.mil

4.2.11. U.S. Army Information Systems Engineering Command (USAISEC) TG for the Integration of SECRET Internet Protocol (IP) Router Network (SIPRNET). See Paragraph 3 for applicability to specific facility type. May not apply to every facility. This is mandatory criteria for those facilities with SIPRNET.

5.0 GENERAL TECHNICAL REQUIREMENTS

This paragraph contains general technical requirements. See also Paragraph 3 for facility-specific technical requirements. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed.

5.1. SITE PLANNING AND DESIGN

5.1.1. STANDARDS AND CODES: The site planning and design shall conform to APPLICABLE CRITERIA and to paragraph 6, PROJECT SPECIFIC REQUIREMENTS.

5.1.2. SITE PLANNING OBJECTIVES: Group buildings in configurations that create a sense of community and promote pedestrian use. See paragraph 3 for additional site planning requirements relating to building functions.

5.1.2.1. Provide enclosures and or visual screening devices for Outdoor Utility such as dumpsters, emergency generators, transformers, heating, ventilation, and air conditioning units from streetscape and courtyard views to limit visual impact. Enclosures shall be compatible with the building they serve and accessible by vehicle. The location of dumpsters can have a significant visual impact and should be addressed as part of an overall building design and incorporated in site planning.

5.1.2.2. Where included in the project, dumpster pads shall be concrete (minimum of 8 inches thick on 4 inch base course, unless site conditions dictate more conservative requirements) and directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles. Provide space at dumpster areas for recycling receptacles. Coordinate with Installation on recycling receptacle types, sizes and access requirements and provide space at dumpster areas to accommodate them.

5.1.2.3. Vehicular Circulation. Apply design vehicle templates provided by the American Association of State Highway and Transportation Officials (AASHTO) to the site design. The passenger car class includes passenger cars and light trucks, such as vans and pick-ups. The passenger car template is equivalent to the non-organizational – privately owned vehicle (POV). The truck class template includes single-unit trucks, recreation vehicles, buses, truck tractor-semi-trailer combinations, and trucks or truck tractors with semi-trailers in combination with full trailers. Provide vehicle clearances required to meet traffic safety for emergency vehicles, service vehicles, and moving vans. Provide required traffic control signage Site entrances and site drive aisles shall maximize spacing between drives, incorporate right-angle turns, and limit points of conflict between traffic. Design Services Drives to restrict access to unauthorized vehicles by removable bollards, gates, or other barriers to meet Anti-Terrorism/Force Protection (ATFP) requirements. Orient service drives to building entrances other than the primary pedestrian entry at the front of the building.

5.1.2.4. Provide Emergency Vehicle Access around the facility and shall be in accordance with AT/FP requirements. Maintain a 33-foot clear zone buffer for emergency vehicles, designed to prevent other vehicles from entering the AT/FP standoff to the building.

5.1.2.5. Clear and grub all trees and vegetation necessary for construction; but, save as many trees as possible. Protect trees to be saved during the construction process from equipment.

5.1.2.6. Stormwater Management. Employ design and construction strategies (Best Management Practices) that reduce stormwater runoff, reduce discharges of polluted water offsite and maintain or restore predevelopment hydrology with respect to temperature, rate, volume and duration of flow to the maximum extent practicable. See paragraph 6, PROJECT SPECIFIC requirements for additional information.

5.1.3. EXTERIOR SIGNAGE: Provide exterior signage in accordance with Appendix H, Exterior Signage. Provide exterior NO SMOKING signage that conveys building and grounds smoking policy.

5.1.4. EXISTING UTILITIES: Base utilities maps and capacities for this site are included as part of this RFP. See paragraph 6 for more detailed information.

5.2. SITE ENGINEERING

5.2.1. STANDARDS AND CODES: The site engineering shall conform to APPLICABLE CRITERIA.

5.2.2. SOILS:

5.2.2.1. A report has been prepared to characterize the subsurface conditions at the project site and is **appended to these specifications**. The report provides a general overview of the soil and geologic conditions with detailed descriptions at discrete boring locations. The Contractor's team shall include a licensed geotechnical engineer to interpret the report and develop earthwork and foundation recommendations and design parameters in which to base the contractor's design. If any additional subsurface investigation or laboratory analysis is required to better characterize the site or develop the final design, the Contractor shall perform it under the direction of a licensed geotechnical engineer. There will be no separate payment for the cost of additional tests. If differences between the Contractor's additional subsurface investigation and the government provided soils report or the reasonably expected conditions require material revisions in the design, an equitable adjustment may be made, in accordance with the provisions of the Differing Site Conditions clause. The basis for the adjustment would be the design and construction appropriate for the conditions described in the Government furnished report or the reasonably expected conditions, in comparison with any changes required by material differences in the actual conditions encountered, in accordance with the terms of contract clause Differing Site Conditions.

5.2.2.2. The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal, as described in Section 01 33 16, *Design After Award*.

5.2.3. VEHICLE PAVEMENTS: (as applicable to the project)

5.2.3.1. Design procedures and materials shall conform to one of the following: 1) the USACE Pavement Transportation Computer Assisted Structural Engineering (PCASE) program, 2) American Association of State Highway and Transportation Officials (AASHTO) or, 3) the applicable state Department of Transportation standards in which the project is located. See paragraph 5.2.2.2 and Section 01 33 16 for required information for the Contractor's geotechnical evaluation report. Provide underdrain systems for pavement designs over cohesive soil subgrades. The minimum flexible pavement section shall consist of 2 inches of asphalt and 6 inches of base or as required by the pavement design, whichever is greater, unless specifically identified by the Government to be a gravel road. Design roads and parking areas for a life expectancy of 25 years with normal maintenance. Parking area for tactical vehicles (as applicable to the project) shall be Portland Cement Concrete (PCC) rigid pavement design. For concrete pavements, submit joint layout plan for review and concurrence. Design pavements for military tracked vehicles (as applicable to the project) IAW USACE PCASE. Traffic estimates for each roadway area will be as shown on the drawings or listed in Section 01 10 00 Paragraph 6.4.4. Pavement markings and traffic signage shall comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices.

5.2.3.2. Parking Requirements.

- (a) All handicap POV parking lots (where applicable in the facility specific requirements) shall meet the ADA and ABA Accessibility Guidelines for accessible parking spaces.
- (b) Design POV parking spaces for the type of vehicles anticipated, but shall be a minimum of 9 ft by 18 ft for POVs, except for two wheel vehicles.

5.2.3.3. Sidewalks. Design the network of walks throughout the complex (where applicable) to facilitate pedestrian traffic among facilities, and minimize the need to use vehicles. Incorporate sidewalks to enhance the appearance of the site development, while creating a sense of entry at the primary patron entrances to the buildings. Minimum sidewalk requirements are in Paragraph 3, where applicable.

5.2.4. CATHODIC PROTECTION: Provide cathodic protection systems for all underground metallic systems and metallic fittings/portions of non-metallic, underground systems, both inside and outside the building 5 foot line that are subject to corrosion. Coordinate final solutions with the installation to insure an approach that is consistent with installation cathodic protection programs.

5.2.5. UTILITIES: See paragraph 6.4.6 for specific information on ownership of utilities and utility requirements. Meter all utilities (gas, water, and electric, as applicable) to each facility. For Government owned utilities, install meters that are wireless data transmission capable as well as have a continuous manual reading option. All meters will be capable of at least hourly data logging and transmission and provide consumption data for gas, water, and

electricity. Gas and electric meters will also provide demand readings based on consumption over a maximum of any 15 minute period. Configure all meters to transmit at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utility(ies) for the proper meter base and meter installation.

5.2.6. PERMITS: The CONTRACTOR shall be responsible for obtaining all permits (local, state and federal) required for design and construction of all site features and utilities.

5.2.7. IRRIGATION. Landscape irrigation systems, if provided, shall comply with the following:

5.2.7.1. Irrigation Potable Water Use Reduction. Reduce irrigation potable water use by 100 percent using LEED credit WE1.1 baseline (no potable water used for irrigation), except where precluded by other project requirements.

5.2.8. EPA WaterSense Products and Contractors. Except where precluded by other project requirements, use EPA WaterSense labeled products and irrigation contractors that are certified through a WaterSense labeled program where available.

5.3. ARCHITECTURE AND INTERIOR DESIGN:

This element will be evaluated per APPLICABLE CRITERIA under the quality focus.

5.3.1. STANDARDS AND CODES: The architecture and interior design shall conform to APPLICABLE CRITERIA.

5.3.2. GENERAL: Overall architectural goal is to provide a functional, quality, visually appealing facility that is a source of pride for the installation and delivered within the available budget and schedule.

5.3.3. COMPUTATION OF AREAS: See APPENDIX Q for how to compute gross and net areas of the facility(ies).

5.3.4. BUILDING EXTERIOR: Design buildings to enhance or compliment the visual environment of the Installation. Where appropriate, reflect a human scale to the facility. Building entrance should be architecturally defined and easily seen. When practical, exterior materials, roof forms, and detailing shall be compatible with the surrounding development and adjacent buildings on the Installation and follow locally established architectural themes. Use durable materials that are easy to maintain. Exterior colors shall conform to the Installation requirements. See paragraph 6.

5.3.4.1. Building Numbers: Each building shall have exterior signage permanently attached on two faces of the building indicating the assigned building number or address. Building number signage details and locations shall conform to Appendix H, Exterior Signage.

5.3.5. BUILDING INTERIOR

5.3.5.1. Space Configuration: Arrange spaces in an efficient and functional manner in accordance with area adjacency matrices.

5.3.5.2. Surfaces: Appearance retention is the top priority for building and furniture related finishes. Provide low maintenance, easily cleaned room finishes that are commercially standard for the facility occupancy specified, unless noted otherwise.

5.3.5.3. Color: The color, texture and pattern selections for the finishes of the building shall provide an aesthetically pleasing, comfortable, easily maintainable and functional environment for the occupants. Coordination of the building colors and finishes is necessary for a cohesive design. Color selections shall be appropriate for the building type. The use of color, texture and pattern shall be used to path or way find through the building. Trendy colors that will become dated shall be limited to non-permanent finishes such as carpet and paint. Finishes should be selected with regards to aesthetics, maintenance, durability, life safety and image. Limit the number of similar colors for each material. Color of Ceramic and porcelain tile grout shall be medium range color to help hide soiling. Plastic laminate and solid surface materials shall have patterns that are mottled, flecked or speckled. Finish colors of fire extinguisher cabinets, receptacle bodies and plates, fire alarms / warning lights, emergency lighting, and

other miscellaneous items shall be coordinated with the building interior. Color of equipment items on ceilings (speakers, smoke detectors, grills, etc.) shall match the ceiling color.

5.3.5.4. Circulation: Circulation schemes must support easy way finding within the building.

5.3.5.5. Signage: Provide interior signage for overall way finding and life safety requirements. A comprehensive interior plan shall be from one manufacturer. Include the following sign types: (1) Lobby Directory, (2) Directional Signs; (3) Room Identification Signs; (4) Building Service Signs; (5) Regulatory Signs; (6) Official and Unofficial Signs (7) Visual Communication Boards (8) NO SMOKING signage that conveys building smoking policy. Use of emblems or logos may also be incorporated into the signage plan.

5.3.5.6. Window Treatment: Interior window treatments with adjustable control shall be provided in all exterior window locations for control of day light coming in windows or privacy at night. Uniformity of treatment color and material shall be maintained to the maximum extent possible within a building.

5.3.6. COMPREHENSIVE INTERIOR DESIGN

5.3.6.1. Comprehensive Interior Design includes the integration of a Structural Interior Design (SID) and a Furniture, Fixtures and Equipment (FF&E) design and package. SID requires the design, selection and coordination of interior finish materials that are integral to or attached to the building structure. Completion of a SID involves the selection and specification of applied finishes for the building's interior features including, but not limited to, walls, floors, ceilings, trims, doors, windows, window treatments, built-in furnishings and installed equipment, lighting, and signage. The SID package includes finish schedules, finish samples and any supporting interior elevations, details or plans necessary to communicate the building finish design and build out. The SID also provides basic space planning for the anticipated FF&E requirements in conjunction with the functional layout of the building and design issues such as life safety, privacy, acoustics, lighting, ventilation, and accessibility. See Section 01 33 16 for SID design procedures.

The FF&E design and package includes the design, selection, color coordination and of the required furnishing items necessary to meet the functional, operational, sustainability, and aesthetic needs of the facility coordinated with the interior finish materials in the SID. The FF&E package includes the specification, procurement documentation, placement plans, ordering and finish information on all freestanding furnishings and accessories, and a cost estimate. Coordinate the selection of furniture style, function and configuration with the defined requirements. Examples of FF&E items include, but are not limited to workstations, seating, files, tables, beds, wardrobes, draperies and accessories as well as marker boards, tack boards, and presentation screens. Criteria for furniture selection include function and ergonomics, maintenance, durability, sustainability, comfort and cost. See Section 01 33 16 for FFE design procedures.

5.4. STRUCTURAL DESIGN

5.4.1. STANDARDS AND CODES: The structural design shall conform to APPLICABLE CRITERIA.

5.4.2. GENERAL: The structural system needs to be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. Select an economical structural system based upon facility size, projected load requirements and local availability of materials and labor. Base the structural design on accurate, site specific geotechnical information and anticipated loads for the building types and geographical location. Consider climate conditions, high humidity, industrial atmosphere, saltwater exposure, or other adverse conditions when selecting the type of cement and admixtures used in concrete, the concrete cover on reinforcing steel, the coatings on structural members, expansion joints, the level of corrosion protection, and the structural systems. Analyze, design and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions and other frangible, non-structural elements to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable of the applicable material standard, e.g., ACI, AISC, Brick Industry Association, etc. When modular units or other pre-fabricated construction is used or combined with stick-built construction, fully coordinate and integrate the overall structural design between the two different or interfacing construction types. If the state that the project is located in requires separate, specific licensing for structural engineers (for instance, such as in Florida, California and others), then the structural engineer designer of record must be registered in that state.

5.4.3. LOADS: See paragraph 3 for facility specific (if applicable) and paragraph 6 for site and project specific structural loading criteria. Unless otherwise specified in paragraph 6, use Exposure Category C for wind. If not specified, use Category C unless the Designer of Record can satisfactorily justify another Exposure Category in its design analysis based on the facility Master Plan. Submit such exceptions for approval as early as possible and prior to the Interim Design Submittal in Section "Design After Award". In addition to gravity, seismic and lateral loads, design the ancillary building items, e.g. doors, window jambs and connections, overhead architectural features, equipment bracing, for the requirements of UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings. Ensure and document that the design of glazed items includes, but is not limited to, the following items under the design loads prescribed in UFC 4-010-01:

- (a) Supporting members of glazed elements, e.g. window jamb, sill, header
- (b) Connections of glazed element to supporting members, e.g. window to header
- (c) Connections of supporting members to each other, e.g. header to jamb
- (d) Connections of supporting members to structural system, e.g. jamb to foundation.

5.4.4. TERMITE TREATMENT: (Except Alaska) Provide termite prevention treatment in accordance with Installation and local building code requirements, using licensed chemicals and licensed applicator firm.

5.5. THERMAL PERFORMANCE

5.5.1. STANDARDS AND CODES: Building construction and thermal insulation for mechanical systems shall conform to APPLICABLE CRITERIA.

5.5.2. BUILDING ENVELOPE SEALING PERFORMANCE REQUIREMENT. Design and construct the building envelope for office buildings, office portions of mixed office and open space (e.g., company operations facilities), dining, barracks and instructional/training facilities with a continuous air barrier to control air leakage into, or out of, the conditioned space. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings.

5.5.2.1. Trace a continuous plane of air-tightness throughout the building envelope and make flexible and seal all moving joints.

5.5.2.2. The air barrier material(s) must have an air permeance not to exceed 0.004 cfm / sf at 0.3" wg (0.02 L/s.m2 @ 75 Pa) when tested in accordance with ASTM E 2178

5.5.2.3. Join and seal the air barrier material of each assembly in a flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of these assemblies and components.

5.5.2.4. Support the air barrier so as to withstand the maximum positive and negative air pressure to be placed on the building without displacement, or damage, and transfer the load to the structure.

5.5.2.5. Seal all penetrations of the air barrier. If any unavoidable penetrations of the air barrier by electrical boxes, plumbing fixture boxes, and other assemblies are not airtight, make them airtight by sealing the assembly and the interface between the assembly and the air barrier or by extending the air barrier over the assembly.

5.5.2.6. The air barrier must be durable to last the anticipated service life of the assembly.

5.5.2.7. Do not install lighting fixtures with ventilation holes through the air barrier

5.5.2.8. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers such as at elevator shafts.

5.5.2.9. Damper and control to close all ventilation or make-up air intakes and exhausts, atrium smoke exhausts and intakes, etc when leakage can occur during inactive periods.

5.5.2.10. Compartmentalize garages under buildings by providing air-tight vestibules at building access points.

5.5.2.11. Compartmentalize spaces under negative pressure such as boiler rooms and provide make-up air for combustion.

5.5.2.12. Performance Criteria and Substantiation: Submit the qualifications and experience of the testing entity for approval. Demonstrate performance of the continuous air barrier for the opaque building envelope by the following tests:

(a) Test the completed building and demonstrate that the air leakage rate of the building envelope does not exceed 0.25cfm/ft² at a pressure differential of 0.3" w.g.(75 Pa) in accordance with ASTM's E 779 (2003) or E-1827-96 (2002). Accomplish tests using either pressurization or depressurization or both. Divide the volume of air leakage in cfm @ 0.3" w.g. (L/s @ 75 Pa) by the area of the pressure boundary of the building, including roof or ceiling, walls and floor to produce the air leakage rate in cfm/ft² @ 0.3" w.g. (L/s.m² @ 75 Pa). Do not test the building until verifying that the continuous air barrier is in place and installed without failures in accordance with installation instructions so that repairs to the continuous air barrier, if needed to comply with the required air leakage rate, can be done in a timely manner.

(b) Test the completed building using Infrared Thermography testing. Use infrared cameras with a resolution of 0.1deg C or better. Perform testing on the building envelope in accordance with ISO 6781:1983 and ASTM C1060-90(1997). Determine air leakage pathways using ASTM E 1186-03 Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems, and perform corrective work as necessary to achieve the whole building air leakage rate specified in (a) above.

(c) Notify the Government at least three working days prior to the tests to provide the Government the opportunity to witness the tests. Provide the Government written test results confirming the results of all tests.

5.6. PLUMBING

5.6.1. STANDARDS AND CODES: The plumbing system shall conform to APPLICABLE CRITERIA.

5.6.2. PRECAUTIONS FOR EXPANSIVE SOILS: Where expansive soils are present, the design for underslab piping systems and underground piping serving chillers, cooling towers, etc, shall include features to control forces resulting from soil heave. Some possible solutions include, but are not necessarily limited to, features such as flexible expansion joints, slip joints, horizontal offsets with ball joints, or multiple bell and spigot gasketed fittings. For structurally supported slabs, piping should be suspended from the structure with adequate space provided below the pipe for the anticipated soil movement.

5.6.3. HOT WATER SYSTEMS: For Hot Water heating and supply, provide a minimum temp of 140 Deg F in the storage tank and a maximum of 110 Deg F at the fixture, unless specific appliances or equipment specifically require higher temperature water supply.

5.6.4. SIZING HOT WATER SYSTEMS: Unless otherwise specified or directed in paragraph 3, design in accordance with ASHRAE Handbook Series (appropriate Chapters), ASHRAE Standard 90.1, and the energy conservation requirements of the contract. Size and place equipment so that it is easily accessible and removable for repair or replacement.

5.6.5. JANITOR CLOSETS: In janitor spaces/room/closets, provide at minimum, a service sink with heavy duty shelf and wall hung mop and broom rack(s).

5.6.6. FLOOR DRAINS: As a minimum, provide floor drains in mechanical rooms and areas, janitor spaces/rooms/closets and any other area that requires drainage from fixtures or equipment, drain downs, condensate, as necessary.

5.6.7. URINALS: Urinals shall be vitreous china, wall-mounted, wall outlet, non-water using, with integral drain line connection, and with sealed replaceable cartridge or integral liquid seal trap. Either type shall use a biodegradable liquid to provide the seal and maintain a sanitary and odor-free environment. Install, test and maintain in accordance with manufacturer's recommendations. Slope the sanitary sewer branch line for non-water use urinals a minimum of 1/4 inch per foot. Do not use copper tube or pipe for drain lines that connect to the urinal. Manufacturer shall provide an operating manual and on-site training to installation operations personnel for the

proper care and maintenance of the urinal. For complexes, non-water using urinals are not required for barracks type spaces.

5.6.8. BUILDING WATER USE REDUCTION. Reduce building potable water use in each building 30 percent using IPC fixture performance requirements baseline.

5.6.9. Do not use engineered vent or Sovent® type drainage systems.

5.6.10. Where the seasonal design temperature of the cold water entering a building is below the seasonal design dew point of the indoor ambient air, and where condensate drip will cause damage or create a hazard, insulate plumbing piping with a vapor barrier type of insulation to prevent condensation. Do not locate water or drainage piping over electrical wiring or equipment unless adequate protection against water (including condensation) damage is provided. Insulation alone is not adequate protection against condensation. Follow ASHRAE Fundamentals Chapter 23, Insulation for Mechanical Systems, IMC paragraph 1107 and International Energy Conservation Code for pipe insulation requirements.

5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

5.7.1. STANDARDS AND CODES: The electrical systems for all facilities shall conform to APPLICABLE CRITERIA.

5.7.2. MATERIALS AND EQUIPMENT: Materials, equipment and devices shall, as a minimum, meet the requirements of Underwriters Laboratories (UL) where UL standards are established for those items. Wiring for branch circuits shall be copper. Motors larger than one-half horsepower shall be three phase. All electrical systems shall be pre-wired and fully operational unless otherwise indicated. Wall mounted electrical devices (power receptacles, communication outlets and CATV outlets) shall have matching colors, mounting heights and faceplates.

5.7.3. POWER SERVICE: Primary service from the base electrical distribution system to the pad-mounted transformer and secondary service from the transformer to the building service electrical equipment room shall be underground. See paragraph 6 for additional site electrical requirements.

5.7.3.1. Spare Capacity: Provide 10% space for future circuit breakers in all panelboards serving residential areas of buildings and 15% spaces in all other panelboards.

5.7.4. TELECOMMUNICATION SERVICE: The project's facilities must connect to the Installation telecommunications (voice and data) system through the outside plant (OSP) telecommunications underground infrastructure cabling system per the I3A Criteria. Connect to the OSP cabling system from each facility main cross connect located in the telecommunications room.

5.7.5. LIGHTING: Comply with the recommendations of the Illumination Engineering Society of North America (IESNA), the National Energy Policy Act and Energy Star requirements for lighting products..

5.7.5.1. Interior Lighting:

(a) Reflective Surfaces: Coordinate interior architectural space surfaces and colors with the lighting systems to provide the most energy-efficient workable combinations.

(b) High Efficiency Fluorescent Lighting: Utilize NEMA premium electronic ballasts and energy efficient fluorescent lamps with a Correlated Color Temperature (CCT) of 4100K. Linear fluorescent and compact fluorescent fixtures shall have a Color Rendering Index of (CRI) of 87 or higher. Fluorescent lamps shall be the low mercury type qualifying as non-hazardous waste upon disposal. Do not use surface mounted fixtures on acoustical tile ceilings. Provide an un-switched fixture with emergency ballast shall be provided at each entrance to the building.

(c) Solid State Lighting: Fixtures shall provide lighting with a minimum Correlated Color Temperature (CCT) of 4100K and shall have a Color Rendering Index of (CRI) of 75 or higher. Verify performance of the light producing solid state components by a test report in compliance with the requirements of IESNA LM 80. Verify performance of the solid state light fixtures by a test report in compliance with the requirements of IESNA LM 79. Provide lab results by a NVLAP certified laboratory. The light producing solid state components and drivers shall have a life

expectancy of 50,000 operating hours while maintaining at least 70% of original illumination level. Provide a complete five year warranty for fixtures.

(d) Metal Halide Lighting (where applicable): Metal Halide lamp fixtures in the range of 150-500 Watts shall be pulse start type and have a minimum efficiency rating of 88%.

(e) Lighting Controls: ANSI/ASHRAE/IESNA 90.1 has specific lighting controls requirements. Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces (classrooms, conference rooms) to promote the productivity, comfort and well being of the building occupants. In office spaces, the preferred lighting should be a 30 FC ambient lighting level with occupancy sensor controlled task lighting in the work spaces to provide a composite lighting level of 50 FC on the working surfaces. Consider incorporating daylighting techniques for the benefit of reducing lighting energy requirements while improving the quality of the indoor spaces. If daylight strategies are used, additional coordination is required with the architect and mechanical engineer. Additionally, incorporate electric lighting controls to take advantage of the potential energy savings.

(f) Exterior Lighting: See paragraph 6.9 for site specific information, if any, on exterior lighting systems. Minimize light pollution and light trespass by not over lighting and use cutoff type exterior luminaries.

5.7.6. TELECOMMUNICATION SYSTEM: All building telecommunications cabling systems (BCS) and OSP telecommunications cabling system shall conform to APPLICABLE CRITERIA to include I3A Technical Criteria. An acceptable BCS encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, conduits, grounding, and labeling.. Items included under OSP infrastructure encompass, but are not limited to, manhole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, cable vaults, and copper and FO entrance cable.

5.7.6.1. Design, install, label and test all telecommunications systems in accordance with the I3A Criteria and ANSI/TIA/EIA 568, 569, and 606 standards. A Building Industry Consulting Services International (BICSI) Registered Communications Distribution Designer (RCDD) with at least 2 yrs related experience shall develop and stamp telecommunications design, and prepare the test plan. See paragraph 5.8.2.5 for design of environmental systems for Telecommunications Rooms.

5.7.6.2. The installers assigned to the installation of the telecommunications system or any of its components shall be regularly and professionally engaged in the business of the application, installation and testing of the specified telecommunications systems and equipment. Key personnel; i.e., supervisors and lead installers assigned to the installation of this system or any of its components shall be BICSI Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification for each of the key personnel. In lieu of BICSI certification, supervisors and installers shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products.

5.7.6.3. Perform a comprehensive end to end test of all circuits to include all copper and fiber optic cables upon completion of the BCS and prior to acceptance of the facility. The BCS circuits include but are not limited to all copper and fiber optic(FO) entrance cables, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, and workstation outlets. Test in accordance with ANSI/EIA/TIA 568 standards. Use test instrumentation that meets or exceeds the standard. Submit the official test report to include test procedures, parameters tested, values, discrepancies and corrective actions in electronic format. Test and accomplish all necessary corrective actions to ensure that the government receives a fully operational, standards based, code compliant telecommunications system.

5.7.7. LIGHTNING PROTECTION SYSTEM: Provide a lightning protection system where recommended by the Lightning Risk Assessment of NFPA 780, Annex L.

5.8. HEATING, VENTILATING, AND AIR CONDITIONING

5.8.1. STANDARDS AND CODES: The HVAC system shall conform to APPLICABLE CRITERIA.

5.8.2. DESIGN CONDITIONS.

5.8.2.1. Outdoor and indoor design conditions shall be in accordance with UFC 3-410-01FA. Outdoor air and exhaust ventilation requirements for indoor air quality shall be in accordance with ASHRAE 62.1. All Buildings with minimum LEED Silver requirement (or better) will earn LEED Credit EQ 7.1, Thermal Comfort-Design.

5.8.2.2. Design systems in geographical areas that meet the definition for high humidity in UFC 3-410-01FA in accordance with the special criteria for humid areas therein.

5.8.2.3. Cooling equipment may be oversized by up to 15 percent to account for recovery from night setback. Heating equipment may be oversized by up to 30 percent to account for recovery from night setback. Design single zone systems and multi-zone systems to maintain an indoor design condition of 50% relative humidity for cooling only. For heating only where the indoor relative humidity is expected to fall below 20% for extended periods, add humidification to increase the indoor relative humidity to 30%. Provide ventilation air from a separate dedicated air handling unit (DOAU) for facilities using multiple single zone fan-coil type HVAC systems. Do not condition outside air through fan coil units. Avoid the use of direct expansion cooling coils in air handling units with constant running fans that handle outside air.

5.8.2.4. Locate all equipment so that service, adjustment and replacement of controls or internal components are readily accessible for easy maintenance.

5.8.2.5. Environmental Requirements for Telecommunications Rooms,(including SIPRNET ROOMS, where applicable for specific facility type). Comply with ANSI/EIA/TIA 569 and the I3A.

5.8.2.6. Fire dampers: dynamic type with a dynamic rating suitable for the maximum air velocity and pressure differential to which the damper is subjected. Test each fire damper with the air handling and distribution system running.

5.8.3. BUILDING AUTOMATION SYSTEM. Provide a Building Automation System consisting of a building control network as specified.

The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of the heating, ventilating and air conditioning (HVAC) systems as specified herein. The building control network shall be an Open implementation of LONWORKS® technology using ANSI/EIA 709.1B as the only communications protocol and use only LonMark Standard Network Variable Types (SNVTs), as defined in the LonMark® Resource Files, for communication between DDC Hardware devices to allow multi-vendor interoperability.

5.8.3.1. The building automation system shall be open in that it is designed and installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original Contractor. This includes, but is not limited to the following:

- (a) Install hardware such that individual control equipment can be replaced by similar control equipment from other equipment manufacturers with no loss of system functionality.
- (b) Necessary documentation (including rights to documentation and data), configuration information, configuration tools, programs, drivers, and other software shall be licensed to and otherwise remain with the Government such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without subsequent or future dependence on the Contractor.

5.8.3.2. All DDC Hardware shall:

- (a) Be connected to a TP/FT-10 ANSI/EIA 709.3 control network.
- (b) Communicate over the control network via ANSI/EIA 709.1B exclusively.
- (c) Communicate with other DDC hardware using only SNVTs
- (d) Conform to the LonMark® Interoperability Guidelines.
- (e) Be locally powered; link power (over the control network) is not acceptable.
- (f) Be fully configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself to support the application. All settings and parameters used by the application shall be configurable via standard or

user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself

(g) Provide input and output SNVTs required to support monitoring and control (including but not limited to scheduling, alarming, trending and overrides) of the application. Required SNVTs include but are not limited to: SNVT outputs for all hardware I/O, SNVT outputs for all setpoints and SNVT inputs for override of setpoints.

(h) To the greatest extent practical, not rely on the control network to perform the application..

5.8.3.3. Controllers shall be Application Specific Controllers whenever an ASC suitable for the application exists. When an ASC suitable for the application does not exist use programmable controllers or multiple application specific controllers.

5.8.3.4. Application Specific Controllers shall be LonMark Certified whenever a LonMark Certified ASC suitable for the application exists. For example, VAV controllers must be LonMark certified.

5.8.3.5. Application Specific Controllers (ASCs) shall be configurable via an LNS plug-in whenever t an ASC with an LNS plug-in suitable for the application exists.

5.8.3.6. Each scheduled system shall accept a network variable of type SNVT_occupancy and shall use this network variable to determine the occupancy mode. If the system has not received a value to this network variable for more than 60 minutes it shall default to a configured occupancy schedule.

5.8.3.7. Gateways may be used provided that each gateway communicates with and performs protocol translation for control hardware controlling one and only one package unit.

5.8.3.8. Not Used

5.8.3.9. Not Used

5.8.3.10. Provide the following to the Government for review prior to acceptance of the system:

- The latest version of all software and user manuals required to program, configure and operate the system.
- Points Schedule drawing that shows every DDC Hardware device. The Points Schedule shall contain the following information as a minimum:
 - Device address and NodeID.
 - Input and Output SNVTs including SNVT Name, Type and Description.
 - Hardware I/O, including Type (AI, AO, BI, BO) and Description.
 - Alarm information including alarm limits and SNVT information.
 - Supervisory control information including SNVTs for trending and overrides.
 - Configuration parameters (for devices without LNS plug-ins) Example Points Schedules are available at <https://eko.usace.army.mil/fa/besc/>
- Riser diagram of the network showing all network cabling and hardware. Label hardware with ANSI.CEA-709.1 addresses.
- Control System Schematic diagram and Sequence of Operation for each HVAC system.
- Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.
- LONWORKS® Network Services (LNS®) database for the completed system.
- Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative

Table 5-1: QC Checklist

5.8.3.11. Perform a Performance Verification Test (PVT) under Government supervision prior to system acceptance. During the PVT demonstrate that the system performs as specified, including but not limited to demonstrating that the system is Open and correctly performs the Sequences of Operation.

5.8.3.12. Provide a 1 year unconditional warranty on the installed system and on all service call work. The warranty shall include labor and material necessary to restore the equipment involved in the initial service call to a fully operable condition.

5.8.3.13. Provide training at the project site on the installed building system. Upon completion of this training each student, using appropriate documentation, should be able to start the system, operate the system, recover the system after a failure, perform routine maintenance and describe the specific hardware, architecture and operation of the system.

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5.8.4. TESTING, ADJUSTING AND BALANCING. Test and balance air and hydronic systems, using a firm certified for testing and balancing by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting, and Balancing Bureau (TABB). The prime contractor shall hire the TAB firm directly, not through a subcontractor. Perform TAB in accordance with the requirements of the standard under which the TAB Firm's qualifications are approved, i.e., AABC MN-1, NEBB TABES, or SMACNA HVACTAB unless otherwise specified herein. All recommendations and suggested practices contained in the TAB Standard shall be considered mandatory. Use the provisions of the TAB Standard, including checklists, report forms, etc., as nearly as practicable to satisfy the Contract requirements. Use the TAB Standard for all aspects of TAB, including qualifications for the TAB Firm and Specialist and calibration of TAB instruments. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the TAB Standard, adhere to the manufacturer's recommendations. All quality assurance provisions of the TAB Standard such as performance guarantees shall be part of this contract. For systems or system components not covered in the TAB Standard, the TAB Specialist shall develop TAB procedures. Where new procedures, requirements, etc., applicable to the Contract requirements have been published or adopted by the body responsible for the TAB Standard used (AABC, NEBB, or TABB), the requirements and recommendations contained in these procedures and requirements are mandatory.

5.8.5. COMMISSIONING: Commission all HVAC systems and equipment, including controls, and all systems requiring commissioning for LEED Enhanced commissioning, in accordance with ASHRAE Guideline 1.1, ASHRAE Guideline 0 and LEED. Do not use the sampling techniques discussed in ASHRAE Guideline 1.1 and in ASHRAE Guideline 0. Commission 100% of the HVAC controls and equipment. Hire the Commissioning Authority (CA), certified as a CA by AABC, NEBB, or TABB, as described in Guideline 1.1. The CA will be an independent subcontractor and not an employee of the Contractor nor an employee or subcontractor of any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). The CA will communicate and report directly to the Government in execution of commissioning activities. The Contracting Officer's Representative will act as the Owner's representative in performance of duties spelled out under OWNER in Annex F of ASHRAE Guideline 0. All buildings with Minimum LEED Silver (or better) requirement will earn LEED Credit EA3 Enhanced Commissioning.

5.9. ENERGY CONSERVATION

5.9.1. The building including the building envelope, HVAC systems, service water heating, power, and lighting systems shall meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.2. Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the buildings, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 40% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1. Energy calculation methodologies and substantiation requirements are defined in Section 01 33 16, Design After Award.

5.9.3. Purchase Energy Star products, except use FEMP designated products where FEMP is applicable to the type product. The term "Energy Star product" means a product that is rated for energy efficiency under an Energy Star program. The term "FEMP designated product" means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent of equivalent products for energy efficiency. When selecting integral sized electric motors, choose NEMA PREMIUM type motors that conform to NEMA MG 1, minimum Class F insulation system. Motors with efficiencies lower than the NEMA PREMIUM standard may only be used in unique applications that require a high constant torque speed ratio (e.g., inverter duty or vector duty type motors that conform to NEMA MG 1, Part 30 or Part 31).

5.9.4. Solar Hot Water Heating. Provide at least 30% of the domestic hot water requirements through solar heating methodologies, unless the results of a Life Cycle Cost Analysis (LCCA) developed utilizing the Building Life Cycle Cost Program (BLCC) which demonstrates that the solar hot water system is not life cycle cost effective in

comparison with other hot water heating systems. The type of system will be established during the contract or task order competition and award phase, including submission of an LCCA for government evaluation to justify non-selection of solar hot water heating. The LCCA uses a study period of 25 years and the Appendix K utility cost information. The LCCA shall include life cycle cost comparisons to a baseline system to provide domestic hot water without solar components, analyzing at least three different methodologies for providing solar hot water to compare against the baseline system.

5.9.5. Process Water Conservation. When potable water is used to improve a building's energy efficiency, employ lifecycle cost effective water conservation measures, except where precluded by other project requirements.

5.9.6. Renewable Energy Features. The Government's goal is to implement on-site renewable energy generation for Government use when lifecycle cost effective. See Paragraph 6, PROJECT SPECIFIC REQUIREMENTS for renewable energy requirements for this project.

5.10. FIRE PROTECTION

5.10.1. STANDARDS AND CODES Provide the fire protection system conforming to APPLICABLE CRITERIA.

5.10.2. Inspect and test all fire suppression equipment and systems, fire pumps, fire alarm and detection systems and mass notification systems in accordance with the applicable NFPA standards. The fire protection engineer of record shall witness final tests. The fire protection engineer of record shall certify that the equipment and systems are fully operational and meet the contract requirements. Two weeks prior to each final test, the contractor shall notify, in writing, the installation fire department and the installation public work representative of the test and invite them to witness the test.

5.10.3. Fire Extinguisher Cabinets: Provide fire extinguisher cabinets and locations for hanging portable fire extinguishers in accordance with NFPA 10 Standard for Portable Fire Extinguishers.

5.10.4. Fire alarm and detection system: Required fire alarm and detection systems shall be the addressable type. Fire alarm initiating devices, such as smoke detectors, heat detectors and manual pull stations shall be addressable. When the system is in alarm condition, the system shall annunciate the type and location of each alarm initiating device. Sprinkler water flow alarms shall be zoned by building and by floor. Supervisory alarm initiating devices, such as valve supervisory switches, fire pump running alarm, low-air pressure on dry sprinkler system, etc. shall be zoned by type and by room location.

5.10.5. Fire Protection Engineer Qualifications: In accordance with UFC 3-600-01, FIRE PROTECTION ENGINEERING FOR FACILITIES, the fire protection engineer of record shall be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES), or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation.

5.11. SUSTAINABLE DESIGN

5.11.1. STANDARDS AND CODES: Sustainable design shall conform to APPLICABLE CRITERIA. See paragraph 6, PROJECT-SPECIFIC REQUIREMENTS for which version of LEED applies to this project. The LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects (AGMBC) applies to all projects. Averaging may be used for LEED compliance as permitted by the AGMBC but is restricted to only those buildings included in this project. Each building must individually comply with the requirements of paragraphs ENERGY CONSERVATION and BUILDING WATER USE REDUCTION.

5.11.2. LEED RATING, REGISTRATION, VALIDATION AND CERTIFICATION: See Paragraph PROJECT-SPECIFIC REQUIREMENTS for project minimum LEED rating/achievement level, for facilities that are exempt from the minimum LEED rating, for LEED registration and LEED certification requirements and for other project-specific information and requirements.

5.11.2.1. Innovation and Design Credits. LEED Innovation and Design (ID) credits are acceptable only if they are supported by formal written approval by GBCI (either published in USGBC Innovation and Design Credit Catalog or accompanied by a formal ruling from GBCI). LEED ID credits that require any Owner actions or

commitments are acceptable only when Owner commitment is indicated in paragraph PROJECT-SPECIFIC REQUIREMENTS or Appendix LEED Project Credit Guidance

5.11.3. OPTIMIZE ENERGY PERFORMANCE. : Project must earn, as a minimum, the points associated with compliance with paragraph ENERGY CONSERVATION. LEED documentation differs from documentation requirements for paragraph ENERGY CONSERVATION and both must be provided. For LEED-NC v2.2 projects you may substitute ASHRAE 90.1 2007 Appendix G in its entirety for ASHRAE 90.1 2004 in accordance with USGBC Credit Interpretation Ruling dated 4/23/2008.

5.11.4. COMMISSIONING. See paragraph 5.8.5 COMMISSIONING for commissioning requirements. USACE templates for the required Basis of Design document and Commissioning Plan documents are available at <http://en.sas.usace.army.mil> (click on Engineering Criteria) and may be used at Contractor's option.

5.11.5. DAYLIGHTING. Except where precluded by other project requirements, do the following in at least 75 percent of all spaces occupied for critical visual tasks: achieve a 2 percent glazing factor (calculated in accordance with LEED credit EQ8.1) OR earn LEED Daylighting credit, provide appropriate glare control and provide either automatic dimming controls or occupant-accessible manual lighting controls.

5.11.6. LOW-EMITTING MATERIALS. Except where precluded by other project requirements, use materials with low pollutant emissions, including but not limited to composite wood products, adhesives, sealants, interior paints and finishes, carpet systems and furnishings,

5.11.7. CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT. Except where precluded by other project requirements, earn LEED credit EQ 3.1 Construction IAQ Management Plan, During Construction and credit EQ 3.2 Construction IAQ Management Plan, Before Occupancy.

5.11.8. RECYCLED CONTENT. In addition to complying with section RECYCLED/RECOVERED MATERIALS, earn LEED credit MR4.1, Recycled Content, 10 percent except where precluded by other project requirements.

5.11.9. BIOBASED AND ENVIRONMENTALLY PREFERABLE PRODUCTS. Except where precluded by other project requirements, use materials with biobased content, materials with rapidly renewable content, FSC certified wood products and products that have a lesser or reduced effect on human health and the environment over their lifecycle to the maximum extent practicable.

5.11.10. FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM (FB4P). The Farm Security and Rural Investment Act (FSRIA) of 2002 required the U.S. Department of Agriculture (USDA) to create procurement preferences for biobased products that are applicable to all federal procurement (to designate products for biobased content). For all designated products that are used in this project, meet USDA biobased content rules for them except use of a designated product with USDA biobased content is not required if the biobased product (a) is not available within a reasonable time, (b) fails to meet performance standard or (c) is available only at an unreasonable price. For biobased content product designations, see <http://www.biopreferred.gov/ProposedAndFinalItemDesignations.aspx>.

5.12. CONSTRUCTION AND DEMOLITION (C&D) WASTE MANAGEMENT: Achievement of 50% diversion, by weight, of all non-hazardous C&D waste debris is required. Reuse of excess soils, recycling of vegetation, alternative daily cover, and wood to energy are not considered diversion in this context, however the Contractor must track and report it. A waste management plan and waste diversion reports are required, as detailed in Section 01 57 20.00 10, ENVIRONMENTAL PROTECTION.

5.13. SECURITY (ANTI-TERRORISM STANDARDS): Unless otherwise specified in Project Specific Requirements, only the minimum protective measures as specified by the current Department of Defense Minimum Antiterrorism Standards for Buildings, UFC 4-010-01, are required for this project. The element of those standards that has the most significant impact on project planning is providing protection against explosives effects. That protection can either be achieved using conventional construction (including specific window requirements) in conjunction with establishing relatively large standoff distances to parking, roadways, and installation perimeters or through building hardening, which will allow lesser standoff distances. Even with the latter, the minimum standoff distances cannot be encroached upon. These setbacks will establish the maximum buildable area. All standards in Appendix B of UFC 4-010-01 must be followed and as many of the recommendations in Appendix C that can reasonably be accommodated should be included. The facility requirements listed in these specifications assume

that the minimum standoff distances can be met, permitting conventional construction. Lesser standoff distances (with specific minimums) are not desired, however can be provided, but will require structural hardening for the building. See Project Specific Requirements for project specific siting constraints. The following list highlights the major points but the detailed requirements as presented in Appendix B of UFC 4-010-01 must be followed.

- (a) Standoff distance from roads, parking and installation perimeter; and/or structural blast mitigation
- (b) Blast resistant windows and skylights, including glazing, frames, anchors, and supports
- (c) Progressive collapse resistance for all facilities 3 stories or higher
- (d) Mass notification system (shall also conform to UFC 4-021-01, Mass Notification Systems)
- (e) For facilities with mailrooms (see paragraph 3 for applicability) – mailrooms have separate HVAC systems and are sealed from rest of building

6.0 PROJECT SPECIFIC REQUIREMENTS

6.1. GENERAL

The requirements of this paragraph augment the requirements indicated in Paragraphs 3 through 5.

6.2. APPROVED DEVIATIONS

The following are approved deviations from the requirements stated in Paragraphs 3 through 5 that only apply to this project.

None

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

The location of the new DOIM facility was selected by Ft McCoy in accordance with their Base Master Plan. The site is located within the controlled perimeter of Ft McCoy. AT/FP setbacks shall be provided as required. The facility is classified Primary Gathering and will require an 82-foot setback between the facility and all roadways or parking areas, existing or new. There are no fencing requirements, however access control shall be required on any maintenance or delivery roads that encroach the 82-foot 'Parking and Roadways' AT/FP setback. Supporting facilities (mechanical and electrical equipment, garbage/recycling dumpsters, landscape plantings, etc) shall be located outside of the 33-foot 'Unobstructed Space' AT/FP setback. The contractor shall be responsible for performing work and providing systems that comply with the LEED requirements stated previously in this document to obtain a LEED Silver rating for this facility. The Contractor shall notify utilities and obtain marked utility locations prior to start of construction. State "One Call" utility location programs are to be used where available.

6.3.1.1 Site Bid Options

Concrete paving of the POV parking lot and access roads shall be provided as a Bid Option in lieu of asphalt, see Section 6.4.4 Pavement Engineering and Traffic Estimates. Landscape plantings shall also be proposed as a separate Bid Option, see Section 6.4.11 Landscaping.

6.3.1.2 Earthwork

The Contractor is responsible for defining earthwork requirements in the geotechnical report and in the Specifications. This includes provisions for recompaction, replacement, and improvement of on-site soils to bring settlement, swell, and bearing capacity within accepted standards for building, pavement, and utility construction, as determined and certified by a qualified and licensed Geotechnical Engineer.

6.3.1.3 Utility Modifications

Contractor shall coordinate with the Xcel Energy regarding the demolition or relocation of existing overhead primary electrical lines on site. Existing utilities may need to be modified or concrete encased as required to protect them. Existing manholes, handholes, valve boxes, and similar infrastructure may also require modifications, such as raising rims and covers to new grade or improving/replacing with traffic rated systems where required.

6.3.2. Site Structures and Amenities

6.3.2.1 Loading Dock and Access Road

The facility shall include a loading dock and associated access road for deliveries. The finished grade of the access road shall be below the loading dock such that the bed of a delivery truck or semi trailer will match the finished floor elevation of the dock when in position to pick up / unload. See access control requirements listed in Section 6.3.3.3.

6.3.2.2 Screen Walls

Provide screen walls for garbage/recycling dumpster and any mechanical or electrical equipment located east of the facility, including a diesel fuel tank if one is provided. Screen walls shall architecturally match the facility in color and material.

6.3.3. Site Functional Requirements:

6.3.3.1. Stormwater Management (SWM) Systems.

Preliminary Geotechnical feedback indicates that the groundwater was encountered at depths as low as 2 feet below existing grade. A foundation underdrain system will be provided to prevent groundwater from intruding into building foundations.

The Contractor shall submit a Stormwater Notice of Intent (NOI) for Wisconsin Pollutant Discharge Elimination System (WPDES) coverage under the general permit for construction activities, an erosion control plan, and a stormwater management plan for the project to the following representative for final review at least 30 days prior to commencing any land disturbing construction activities: Mr. Alan Balliett, Environmental Division Chief, US Army, Fort McCoy, 2171 South 8th Avenue, Fort McCoy, WI 54656, Alan.Balliett@us.army.mil, Tel. (608)-388-4776

The NOI stormwater package requires project site modeling using WINSLAMM or a similar Department approved computer model to determine long term soil loss using a 2-yr / 24-hr storm. Pictures of the site and a 7.5-minute USGS map of the site are required in the package.

The NOI submittal must include the permit fee made out to WDNR. Fort McCoy will mail the final NOI package to WDNR within 14 days of Contractor construction activities. If the WDNR has not notified the Contractor or Fort McCoy within 14 days from receipt of submittal, the project may commence.

The instructions and appropriate Department forms for filling out the NOI are included in Appendix AA.

General stormwater questions for completion of the NOI and WDNR forms may be addressed to: Mr. Kurt Rasmussen, Stormwater Specialist, Wisconsin Department of Natural Resources, Tel. (608) 785-9910

6.3.3.1.1 Stormwater Management Plan Requirements

The Contractor shall complete and submit a stormwater management plan to include with the NOI package for coverage under the general WPDES permit. The stormwater management plan shall address pollution caused by stormwater discharges from the site after construction is completed, including rooftops, parking lots, roadways and the maintenance of grassed areas.

The stormwater management plan shall meet the applicable performance standards in NR 151.12, Wis. Adm. Code for construction sites that are not transportation facilities. These performance standards include requirements for total suspended solids, peak flow, infiltration, protective areas and fueling and vehicle maintenance areas.

The stormwater management plan shall include a description of the BMPs that will be installed during the construction process to control total suspended solids and peak flow, enhance infiltration, maintain or restore protective areas and to reduce petroleum in runoff that will occur after construction operations have been completed. Stormwater BMPs shall be in accordance with applicable state and local regulations.

When permanent infiltration systems are used, appropriate on-site testing shall be conducted to determine if seasonal high groundwater elevation or top of bedrock is within 5 feet of the bottom of the proposed infiltration system.

Stormwater BMPs shall be adequately separated from wells to prevent contamination of drinking water, and the following minimum separation distances shall be met:

Stormwater infiltration systems and ponds shall be located at least 400 feet from a well serving a community water system unless the Department concurs that a lesser separation distance would provide adequate protection of a well from contamination.

Stormwater BMPs shall be located with a minimum separation distance from any well serving a non-community or private water system as listed within s. NR 812.08, Wis. Adm. Code.

Note: Chapter NR 815, Wis. Adm. Code, regulates injection wells including stormwater injection wells. Construction or use of a well to dispose of stormwater directly into groundwater is prohibited under s. NR 815.11(5), Wis. Adm. Code.

For any permanent structures, provisions shall be made for long-term maintenance with the municipality or other responsible party. For an NOI submitted to the Department, a copy of the signed long-term maintenance agreement shall be submitted to the Department with the NOI unless the Department agrees that it may be submitted by an alternative date prior to termination of permit coverage. The Department may withhold permit coverage until the long-term maintenance agreement is submitted to the Department.

BMPs to control impacts from stormwater runoff include infiltration systems, wet detention ponds, constructed wetlands, grassed swales, vegetative protective areas, reduced imperviousness, beneficial reuse such as irrigation or toilet flushing, combinations of these practices, or other methods which do not cause significant adverse impact on the receiving surface water or groundwater. The stormwater management plan shall include an explanation of the technical basis used to select the BMPs.

Note: Department-approved stormwater management technical standards can be obtained through the through the Department stormwater website at: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm> or contact the Department stormwater program in the Bureau of Watershed Management at (608) 267-7694 to get information on how to obtain stormwater management standards.

6.3.3.2. Erosion and Sediment Control

The Contractor shall complete and submit an erosion control plan to include with the NOI package for coverage under the general WPDES permit. The construction site erosion control plan shall include, at a minimum, the following items:

- (a) Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographical map.
- (b) Description of the intended timing and sequence of major land disturbing construction activities for major portions of the construction site, such as grubbing, excavating, or grading.
- (c) Estimates of the total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing construction activities.
- (d) Available data describing the surface soil as well as subsoils.
- (e) Name of immediate named receiving water from the United States Geological Survey 7.5-minute series topographic maps, and whether the receiving water is an outstanding resource water (ORW), exceptional resource water (ERW) or an impaired water. An updated list of Wisconsin impaired water bodies are listed on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html>

ORWs and ERWs are listed in NR 102.10 and 102.11, Wis. Adm. Code. ORWs and ERWs are also listed on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/>

- (f) The construction site erosion control plan shall include a site map with the following items:
 - (1) Pre-existing topography and drainage patterns, roads and surface waters.
 - (2) Boundaries of the construction site.
 - (3) Drainage patterns and approximate slopes anticipated after major grading activities.
 - (4) Areas of soil disturbance.

- (5) Location of major controls identified in the construction site erosion control plan.
 - (6) Location of areas where stabilization practices will be employed.
 - (7) Areas that will be vegetated following land disturbing construction activities.
 - (8) Area and location of wetland acreage on the construction site and locations where storm water is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.
 - (9) Areas that will be used for infiltration of post-construction storm water runoff.
 - (10) An alphanumeric or equivalent coordinate system for the entire construction site.
 - (11) Additional items necessary to depict site-specific conditions.
- (g) The construction site erosion control plan shall include a description of appropriate erosion and sediment control BMPs that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The construction site erosion control plan shall clearly describe the appropriate erosion and sediment control BMPs for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control BMPs will be implemented. Construct or install temporary and permanent erosion and sediment control BMPs as specified in Section 01 57 23 TEMPORARY STORM WATER POLLUTION CONTROL (Appendix EE). The description of erosion and sediment control BMPs shall include the following minimum requirements:
- (1) Description of the expected level of sediment control on the construction site that achieves compliance with s. NR 151.11 or 151.23, Wis. Adm. Code, where applicable.
 - (2) Description of interim and permanent stabilization practices, including a schedule for implementing the practices. The construction site erosion control plan shall ensure that existing vegetation is preserved where feasible and that disturbed portions of the construction site are stabilized as soon as practicable.
 - (3) Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site.
 - (4) Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.
 - (5) Trapping of sediment in channelized flow.
 - (6) Staging land disturbing construction activities to limit exposed soil areas subject to erosion.
 - (7) Protection of down slope drainage inlets where they occur.
 - (8) Prevent tracking of sediment from the construction site onto roads and other paved surfaces.
 - (9) Prevent the discharge of sediment as part of site de-watering.
 - (10) Protect separate storm drain inlet structures from receiving sediment.
 - (11) Clean up of off-site sediment deposits.
 - (12) Stabilization of drainage ways.
 - (13) Installation of permanent stabilization practices as soon as possible after final grading.
 - (14) Description of erosion and sediment control practices put in place for the winter to prevent soil from leaving the construction site during periods of winter and spring thaw and rains.

- (15) Use and storage of chemicals, cement and other compounds and materials used on the construction site shall be managed during the construction period to prevent their transport by runoff into waters of the state.
- (16) Minimization of dust to the maximum extent practicable.
- (17) Additional items necessary to address site-specific conditions.
- (h) Sediment control BMPs shall be constructed and placed in operation prior to runoff entering waters of the state.

Note: While regional treatment facilities are appropriate for control of post-construction pollutants they should not be used for construction site sediment removal.

- (i) No solid materials, including building materials, may be discharged in violation of Chapters 30 and 31, Wis. Stats., or 33 USC 1344 or a U.S. Army Corps of Engineers Section 404 permit issued under 33 USC 1344.
- (j) Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive flow from the structure to a watercourse so that the natural physical and biological characteristics and functions of the watercourse are maintained and protected.
- (k) Runoff settling basins and pit/trench dewatering settling basins, if used, shall be constructed and operated in accordance with good engineering practices and design standards, and as follows:
 - (1) Basins shall discharge to a vegetated or otherwise stabilized area protected from erosion. The principal spillway shall discharge at the bottom of the embankment.
 - (2) When the accumulated sediment reaches one-half the height of the sediment control structure, or one-half the depth of the permanent pool, the sediment shall be removed. Materials removed from basins shall be properly disposed of in a manner that will not pollute waters of the state.
 - (3) Consideration should be given to installing fences around construction site settling basins for human safety.
- (l) All maintenance shall be done in accordance with Department-approved technical standards. Where measures are not in accordance with Department-approved technical standards, a description of the procedures used to maintain effective operating conditions of vegetation, erosion and sediment control measures and other protective measures shall be identified in the erosion control plan.
- (m) The construction site erosion control plan shall clearly identify the contractor(s) and subcontractor(s) that will install and maintain erosion and sediment control measures. This information may be added to the plan after the NOI has been submitted to Department. It shall be included in the plan prior to the commencement of land disturbing construction activities.

6.3.3.3. Vehicular Circulation.

The vehicular and pedestrian circulation system shall promote safe, efficient movement of vehicles and pedestrians within the site area. Roadways shall be designed to accommodate the turning movements of a WB-62 vehicle (AASHTO). Parking areas and access roads shall be asphalt paved. Sidewalks, dumpster pads, aprons, and equipment pads shall be concrete. POV parking spaces will be a minimum of 9 feet wide by 18 feet deep. Accessible parking stalls will be ADA Universal Accessible stalls, 11 feet wide by 18 feet deep with at least one 5 foot wide access aisle adjacent to each stall. Each roadway aisle shall be at least 12 feet wide.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

Elevations on site average 871 feet above mean sea level and the site generally drains to the northwest corner of the site.

6.4.1.1 Grading and Drainage Design

The difference in grade between the finished floor elevation FFE and the surface of the ground immediately adjacent to the building shall be a minimum of 6 inches, except at personnel and overhead doors. The ground outside the building shall have a minimum of 5 percent slope away from all exterior walls for the first 10 feet, 2 percent slope away 30 feet beyond that, and positive drainage thereafter. The Contractor's geotechnical engineer shall identify if steeper grades are necessary based on shrink/swell soil characteristics.

Design grades to provide required sight lines related to traffic and roadway design. Design grades to meet accessibility requirements where required. A balance of the quantity of cut and fill soils which would create a smooth transition of graded areas into the existing natural site is desired. Site specific conditions such as flood and drainage protection, slopes and access reasons may cause unbalanced earthwork operations and are to be identified by the Contractor.

6.4.2. Existing Geotechnical conditions: See Appendix A for a preliminary geotechnical report.

6.4.2.1 Contractor's Geotechnical Report

A final Geotechnical Evaluation Report shall be prepared by the Contractor's licensed Professional Geotechnical Engineer based on the geotechnical exploration provided herein. The report, including foundation and pavement designs, shall be submitted to the Contracting Officer for review and approval prior to beginning construction. A capillary water barrier is required for all interior slabs on grade. Preliminary Geotechnical feedback indicates that groundwater was encountered at depths as low as 2 feet below existing grade. Suitable fill materials shall be provided in order to ensure groundwater does not penetrate the foundation section. Contractor shall design all corrosion control and grounding systems. The Geotechnical Report shall determine project dewatering requirements. If temporary construction dewatering is required due to a high water table, the contractor shall prepare and present a dewatering plan for review and approval. Contractor shall be responsible for securing all the information necessary for the design of the system.

It is possible that site specific subsurface conditions evaluated by the Contractor will produce results that differ from those assumed herein. Therefore, it is the responsibility of the Contractor to establish a meeting with the Contracting Officer subsequent to completion and evaluation of his site specific geotechnical evaluation to outline any differences encountered that are not consistent with the information provided herein. Should those differences require changes in the foundation type, pavement and earthwork requirements proposed with the bid that result in more cost, these differences shall be clearly outlined for the meeting.

6.4.2.2 Soil Compaction and Foundation Excavations

Basic soil compaction requirements are to be given in the Contractor's Geotechnical Report. The Outline Technical Specifications requirements shall be verified or modifications recommended by the Contractor's geotechnical engineer in the report whenever engineering, soils or climatic factors indicate the necessity. Any modifications to the stated compaction requirements shall require approval from the Contracting Officer. Soil compaction shall be achieved by equipment approved by a professional geotechnical engineer. Material shall be moistened or aerated as necessary to provide the moisture content that shall readily facilitate obtaining the compaction specified with the equipment used. Each layer of fill placement shall be not greater than 8 inches thick. Compact each layer to not less than the percent of maximum density specified as follows, determined in accordance with ASTM D-1557. Foundations, 95%; Concrete Work and Pavements, 90%; Landscaping, 85%; Retaining Wall Backfill, 85-90%. Subgrade suitability (by proof rolling operations), fill placement and compaction operations shall be observed and tested on a full time basis by a qualified independent testing agency as directed by the Contractor's licensed professional geotechnical engineer. Field in-place density shall be determined and checked in accordance with the appropriate ASTM methodologies. The rate of in-place density testing shall be specified in the earthwork specifications. Representative Optimum Moisture and Laboratory Maximum Density Tests shall be made for each type of material or source of material. Upon completion of all earthwork, the Contractor's geotechnical engineer shall certify in writing that the fill was placed in accordance with the requirements and provide the backup data including but not limited to: Proctor curves (moisture/density relationship), moisture contents, Atterberg limits, field density checks, sieve analysis, etc. Testing locations and elevations for all results shall be documented so that their position can be substantiated and relocated if necessary. During construction, all foundation excavations shall be inspected and approved by the Contractor's licensed professional geotechnical engineer prior to placing concrete.

6.4.3. Fire Flow Tests See Appendix D for results of fire flow tests to use for basis of design for fire flow and domestic water supply requirements.

A fire flow test was performed as required by UFC 3-600-01 and per requirements of NFPA 291. The flow test was conducted on March 22, 2010 at 1315 at the proposed project site using existing Mueller fire hydrants No. 1411 (static) and 1412 (flow). The static pressure was 78 psi and the residual was 68 psi with 978 gpm flowing. There is 2,531 gpm available at 20 psi.

The flow test data shall be used by the Contractor to determine if the water availability and pressure is adequate for the facility fire suppression system and whether a fire pump and storage tanks will be required. Preliminary flow test data provided in Appendix D indicates that the existing water system is adequate and a fire pump and storage tanks are not required. If the Contractor's flow test and evaluation indicates a fire pump and storage tanks will be required, it will be treated as a changed condition.

6.4.4. Pavement Engineering and Traffic Estimates:

Pavement design shall be based on the results of geotechnical investigations as well as the design load based on the maximum load capacity allowed by the Wisconsin Department of Transportation for a WB-62 semi tractor-trailer or garbage dumpster vehicle (AASHTO), whichever provides the higher Equivalent Single Axle Load (ESAL). Traffic estimates shall assume a 20-year design life. Asphalt paving shall be provided in the Base Bid and concrete paving shall be shown as a Bid Option. Roadway section(s) shall be designed by a qualified and licensed Professional Engineer using the USACE Pavement-Transportation Computer Assisted Structural Engineering (PCASE) Program. SUPERPAVE is the USACE preferred pavement design, however on occasion the "selected binder grade" (SUPERPAVE terminology) used has been incorrect resulting in rutting and/or excessive cracking. Often the State DOT specifications do not appropriately address this issue and therefore cannot be singularly depended on for an acceptable product. Therefore, if SUPERPAVE is utilized, it is essential that the Design Build contractor use appropriate SUPERPAVE design techniques. Pavement sections and supporting calculations shall be submitted to the USACE for review and approval.

6.4.5. Traffic Signage and Pavement Markings

Traffic control signage and striping shall comply with the Manual on Uniform Traffic Control Devices (MUTCD) and shall be reflectorized. Minimum signage requirements shall be as follows and as otherwise specified or shown on the Drawings: ADA accessible parking stalls, Low Emitting & Fuel Efficient Vehicle parking stalls, Carpool / Vanpool parking stalls, and Delivery Access Only sign for loading dock access road.

6.4.6. Base Utility Information

The Contractor shall notify utilities and obtain marked utility locations prior to start of construction. State "One Call" utility location programs are to be used where available.

6.4.6.1 Storm Drainage

Preliminary Geotechnical feedback indicates that the groundwater was encountered at depths as low as 2 feet below existing grade. A foundation underdrain system will be provided to prevent groundwater from intruding into building foundations.

6.4.6.2 Electrical

See section 6.9 Site Electrical and Telecommunications Systems.

6.4.6.3 Water Distribution System

The facility domestic and fire suppression water services shall be fed by the existing water main located parallel to and just south of 11th Avenue. Preliminary flow testing indicates that the system is capable of supplying the estimated demands, contractor shall verify and design services based on applicable DoD design standards. Contractor shall provide new fire service main routed from the existing gridded 8 inch water main to the new Fire Riser room. Provide a post indicator valve (PIV) on the new fire service main with padlock, keyed to match facility standards. Provide a tamper switch on the PIV and connect to the building fire alarm system. Install a double check backflow preventer inside the new fire riser room where the fire service enters the new building. Construct a free-standing fire department connection (FDC) with 5.5 inch Storz connection along the loading dock access road at least 40 feet from the building and within 6 feet of the hard surfaced access road. Locate the FDC immediately next

to a fire hydrant and the PIV within 6 feet of the FDC and fire hydrant. Protect all devices and equipment from vehicular impacts by constructing steel bollards; locate bollards in a manner that does not impair equipment operations.

6.4.6.4 Sanitary Sewer System

The facility wastewater service shall discharge to the existing sanitary sewer manhole located south of the future southeast corner of the facility. This manhole is part of the Ft McCoy sanitary sewer collection system, which runs parallel to and north of 11th Avenue and crosses 11th Avenue in this area.

6.4.6.5 Natural Gas Distribution System

Natural gas service on Ft. McCoy is owned, installed, and maintained by Xcel Energy. Jaymie Holte (608-789-3677) is the point of contact at Xcel for natural gas. Ken Green (608-388-4663) is the Resident Engineer (RE) and point of contact for natural gas at Ft McCoy. New gas service will be brought to the building from the existing gas line on the north side of 11th Avenue. Provide a gas distribution system designed in accordance with the applicable codes, and utility company and State requirements. Gas distribution systems, between the main and the meter assembly (up to and including the meter) will be provided and installed by Xcel Energy. Contractor shall coordinate the installation of this line with Xcel Energy. Connection to existing gas distribution system shown on the Drawings is preliminary, coordinate location of connection with Xcel Energy and Ft McCoy RE. Gas service work accomplished by the contractor shall utilize specialty subcontractors approved by the utility provider.

6.4.6.5.1 Materials

Piping, valves, regulators and vaults shall be that required or utilized by the local gas company and State agencies. Contractor shall coordinate with the gas company and State agencies for this information.

6.4.6.5.2 Testing

Prove that the entire system of gas mains and service lines is gas-tight by an air test, in accordance with ANSI B31.8. The test shall continue for at least 24 hours between initial and final readings of pressure and temperature. Contractor shall ensure that this test is performed.

6.4.6.5.3 Mains and Service Lines

Lines shall not be placed under any buildings. Lines shall be placed with a minimum of 4 inches of earth cover. Protective casings shall be provided to protect lines from superimposed street or heavy traffic loads.

6.4.6.6 Communications

See section 6.9 Site Electrical and Telecommunications Systems.

6.4.7. Cut and Fill

Substantial fill will be required beneath the new facility in order to ensure positive drainage away from the facility as well as prevent groundwater intrusion into the foundation. Parking lot and roadway alignments will require minimum cut / fill and will generally match existing grades. Additional cut / fill measures shall be taken to provide drainage swales and ditches. Grading within the 100 foot wetland setback shall be minimal and only as required to ensure positive drainage from the new facility.

6.4.7.1 Dewatering

The Contractor shall be responsible for dewatering necessary for grading and other subsurface works for the construction of the Project. If temporary construction dewatering is required due to a high water table the Contractor shall prepare and present a dewatering plan. The Contractor is responsible for securing all the required information necessary for the design of the system.

6.4.8. Borrow Material

Borrow material and construction methods shall meet the requirements of the Wisconsin Department of Transportation 2010 Standard Specifications, Section 208 Borrow. Obtain borrow material required for construction from sources off government property. Borrow materials are to be free of hazardous materials and contaminants, waste and deleterious materials. Provide test results to the Government for a composite sample from each borrow site to verify compliance to these conditions or provide documents demonstrating compliance with State and Installation regulations regarding transport of borrow materials that are free of hazardous materials or contaminants. On site borrow or excess may be used if it meets requirements for which it is to be used.

6.4.9. Haul Routes and Staging Areas

Haul routes and staging areas shall be as proposed on the Drawings shown in Appendix J or as otherwise approved by the Base prior to implementation. Care shall be taken to ensure that haul routes are kept clean and that staging areas meet all applicable environmental and stormwater requirements.

6.4.10. Clearing and Grubbing:

Clear and grub all trees and vegetation necessary for construction, but save as many trees as practical. Clearing and grubbing methods shall meet the requirements of the Wisconsin Department of Transportation 2010 Standard Specifications, Section 201 Clearing and Grubbing. Contractor should attempt to adhere to the requirements and qualify for credit of USGBC LEED SS Credit 5.1: Site Development – Protect or Restore Habitat, which restricts site disturbance activity and quantifies restoration and protection measures for the site.

6.4.11. Landscaping:

To reduce erosion and control sediment transport, all finished grades shall receive either hardscaping (paving, gravel, landscape rock, etc) or the Ft McCoy standard drought tolerant grass seed mix, see Section 6.4.12 Turf. Landscape beds adjacent to turf areas shall include a metal edging system. Planting beds and trees, if provided, shall receive a minimum of 3" organic mulch over a non-woven weed barrier fabric. Buildings and accessory units are to receive a minimum 1 foot wide concrete maintenance strip.

6.4.11.1 Landscaping Bid Option

Additional landscaping elements may be provided as a bid option however no irrigation will be provided and all planting materials will be drought tolerant and native to the area.

6.4.11.1.1 Quality Assurance

Plant varieties shall be nursery grown or plantation grown stock. They shall be grown under climatic conditions similar to those in the locality of the project. Well-shaped, vigorous, healthy plants having healthy and well-branched root systems shall be provided. Plants shall be free from disease, harmful insects and insect eggs, sunscald injury, disfigurement, and abrasion. Balled and burlapped and container grown plants shall be in accordance with American Standard for Nursery Stock. Bare root plants are generally not acceptable.

6.4.11.1.2 Soil Testing

Test for percolation shall be done to determine positive drainage of plant pits and beds. All soil and drainage conditions detrimental to the growth of plant material shall be identified and a proposal correcting the conditions shall be submitted. A soil test shall be performed for pH, chemical analysis, and mechanical analysis to establish the quantities and type of soil amendments required to meet local growing conditions for the type and variety of plant material specified.

6.4.11.1.3 Installation

Verify the location of underground utilities. When obstructions below ground or poor drainage affect the planting operation, proposed adjustments to plant location, type of plant, and planting method or drainage correction shall be submitted. The plant material shall be installed during appropriate planting times and conditions. The planting operation shall be performed only during periods when beneficial results can be obtained. When special conditions warrant a variance to the planting operations, proposed planting times should be submitted. Installed plants shall be

maintained in a healthy growing condition. Maintenance operations shall begin immediately after each plant is installed and shall continue until the plant establishment period commences.

6.4.11.1.4 Establishment Period

When the contractor has completed the planting operation and has notified the Contracting Officer in writing, the date of completion, the plant establishment period for maintaining seeded and planted materials in a healthy growing condition shall commence and shall be in effect for the following 12 months. When the planting or seeding operations extends over more than one season or there is a variance to the planting or seeding times, the establishment periods shall be established for each portion of work completed. The maintenance of seed and plant material during the 12 month plant establishment period shall include watering, straightening plants, protecting plant areas from erosion, maintaining erosion material, supplementing mulch, maintaining edging of beds, checking for girdling of plants and maintaining plant labels, weeding, removing and replacing unhealthy plants. A plant shall be considered unhealthy or dead when the main leader has died back, or 25 percent of the crown is dead, or it has been determined that a plant's health is being compromised due to disease or pests. Determine the cause for an unhealthy plant. Unhealthy or dead plants shall be removed immediately and shall be replaced as soon as seasonal conditions permit in accordance with the following warranty paragraph.

6.4.11.1.5 Warranty

Furnished plant material shall be guaranteed to be in a vigorous growing condition during its individual 12 month plant establishment period. As each unhealthy plant is replaced, the plant establishment and warranty period starts over again for the replaced plant material until the completion of the warranty period. It will be the contractor's responsibility to replace a plant as many times as necessary until the plant completes its 12 month establishment period.

6.4.12. Turf:

6.4.12.1 Grass Seed

Deliver seed in bags tagged and labeled to show percent of purity and germination, year of production, net weight, and date of packaging. Seed shall have been tested within one year prior to seeding and shall conform to latest seed laws of the United States and of the State of Wisconsin. Deliver grass seed mixture in sealed containers; seed in damaged packaging is not acceptable. Weed seed shall not exceed one percent by weight of the total mixture. Seed mixtures shall conform to the following percentages by weight:

- Red, Tall, and/or Hard Fescue 40 – 50 %
- Redtop 5 – 20 %
- Kentucky Bluegrass 5 – 20 %
- Perennial Ryegrass 10 – 20 %
- Annual Ryegrass 5 – 10 %

6.4.12.2 Temporary Ground Cover

If there are delays in construction or a quick ground cover is required to prevent erosion, the areas designated for turf or meadow grasses shall be seeded with a temporary seed. When no other turf or meadow grasses have been applied, the quantity of one-half of the required soil amendments shall be applied and the area tilled.

6.4.12.3 Turf Establishment

Turf shall be installed during appropriate planting times and conditions recommended by the trade for the type and variety of turf specified. The establishment operations shall be performed only during periods when beneficial results can be obtained. Drainage patterns shall be maintained. Turf shall be installed using the methods recommended by the trade for the type and variety of species specified. Immediately after seeding, the area shall be protected against traffic or other use by erecting barricades and providing signage as required. When the

contractor has completed the seeding operations and has notified the Contracting Officer in writing, the date of completion, the turf establishment period shall end twelve months after the documented completion of seeding operations. An unsatisfactory ground cover shall be repaired as soon as seeding conditions permit. At the end of the establishment period, a satisfactory stand of seeded turf shall be healthy, uniform, close and free of weeds and surface irregularities, with coverage exceeding 95% and bare spots not exceeding **6 by 6 inches**.

6.4.12.4 Turf Maintenance during Establishment Period

Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf for a minimum of 12 months. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth turf. No permanent irrigation shall be provided and temporary irrigation measures shall be removed within 1 year of installation and as required to qualify for USGBC LEED WE Credit 1: Water Efficient Landscaping, Option 2. No Potable Water Use or Irrigation.

6.5. ARCHITECTURE

6.5.1. General: To the maximum extent possible within the contract cost limitation, the buildings shall conform to the look and feel of the architectural style and shall use the same colors as adjacent facilities as expressed herein. The Government will evaluate the extent to which the proposal is compatible with the architectural theme expressed in the RFP during the contract or task order competition. The first priority in order of importance is that the design provides comparable building mass, size, height, and configuration compared to the architectural theme expressed herein. The second priority is that design is providing compatible exterior skin appearance based upon façade, architectural character (period or style), exterior detailing, matching nearby and installation material/color pallets, as described herein.

6.5.2. Design

6.5.2.1. Appendix F is provided "For Information Only", to establish the desired site and architectural themes for the area. Appendix F identifies the desired project look and feel based on Fort McCoy's Installation Architectural Theme from existing and proposed adjacent building forms; i.e. building exterior skin, roof lines, delineation of entrances, proportions of fenestration in relation to elevations, shade and shadow effects, materials, textures, exterior color schemes, and organizational layout.

6.5.2.2. The design should address Fort McCoy's identified preferences. Implement these preferences considering the following:

- (a) Achievable within the Construction Contract Cost Limitation (CCL)
- (b) Meets Milestones within Maximum Performance Duration.
- (c) Achieves Full Scope identified in this Solicitation
- (d) Best Life-Cycle Cost Design
- (e) Meets the Specified Sustainable Design and LEED requirements
- (f) Complies with Energy Conservation Requirements Specified in this RFP.

6.5.2.3. Priority #1. Visual Compatibility: Facility Massing (Size, Height, Spacing, Architectural Theme, etc.) Exterior Aesthetic Considerations: The buildings massing, exterior functional aesthetics, and character shall create a comprehensive and harmonious blend of design features that are sympathetic to the style and context of the Installation. The Installation's intent for this area is:

Provide an Information Systems Facility that uses visually appealing materials and colors that express the architectural thematic characteristic of the installation. The organization of the building elevations should reflect the size and spacing of other buildings on the site while acknowledging the unique functional requirements of the interior of this facility. Emphasis should be given to creating a main entrance to the facility that provides a strong sense of place and is easily recognizable as the main entrance to the facility. Site and Architectural conceptual drawings that meet this objective are shown in Appendix J.

6.5.2.4. Priority #2. Architectural Compatibility: Exterior Design Elements (Materials, Style, Construction Details, etc.) Roofs, Exterior Skin, and Windows & Door Fenestrations should promote a visually appealing compatibility with the desired character while not sacrificing the integrity and technical competency of building systems.

6.5.2.5. See Appendix F for exterior colors that apply to Architectural character at Fort McCoy. The manufacturers and materials referenced are intended to establish color only, and are not intended to limit manufacturers and material selections.

6.5.2.6. Additional architectural requirements:

(a) Install fall protection anchor points on all roofs with a slope greater than 2:12

(b) The preferred system for exterior walls of the Information Systems Facility is a load bearing concrete masonry unit (CMU) cavity wall with masonry or brick veneer, with brick veneer being preferred. Provide as a minimum R-9.5 continuous insulation on the outside face of the load-bearing masonry walls and a 1.5-inch air gap between the back of the veneer and the outside face of the rigid insulation on the face of the back-up material.

(c) Provide as a minimum R-13 insulation in the wall cavity and R-7 continuous insulation on the outside face of the wall sheathing and a 1.5-inch air gap between the back of the veneer and the outside face of the rigid insulation on the face of the metal stud back-up wall.

(d) The preferred system for the roofing system is a standing seam metal roof with a minimum 3 on 12 slope, mechanically seamed and a 20-year watertight roof materials and finish warranty. In addition, the Army prefers a 5-year bonded warranty be provided by the contractor for watertightness. The Army also prefers that the sloped roof system includes a minimum overhang at the eaves of at least 3-feet.

(e) Occupancy classifications, construction types, allowable areas, maximum building heights, smoke and fire separation requirements shall comply with the requirements of the International Building Code, the I3MP Guide, and associated standards and UFCs.

(f) The Contractor is encouraged to develop an attractive exterior design, and will be permitted to use accents of varying brick, split-faced or ground face CMU, precast concrete, stone, tile, or metal. Exterior walls are to include the generous use of fixed windows in office areas. All exterior wall types are to be evaluated for vapor transmission by a registered engineer. Stamped calculations demonstrating that no condensation issues will occur need to be provided by the Designer of Record.

(g) Roofing material and color shall be compatible with the adjacent buildings. Roofing systems are to have a minimum of Underwriters Laboratory (UL) Class A rating for fire resistance. Wind resistance rating shall be in accordance to the wind zone classification established by the ASCE 7 for the geographic location of the facility. The roofing system will have a 20-year watertight, material and finish material warranty. In addition, a metal roofing system will have been tested with ASTM E 1592 and designed in accordance with ASCE 7 and show the clip spacing, wind zone locations, and dimensions with a registered engineer's stamp on the calculations.

(h) Trim and Flashing: Rain gutters, downspouts, fascias, and soffits shall be prefinished metal; comply with SMACNA Architectural Sheet Metal Manual; provide 20-year manufacturer's finish warranty. Materials and colors are to be compatible with the standing seam metal roof system.

(i) Provide rain gutters, downspouts, splash blocks and other roof drainage elements as appropriate to direct runoff away from the building without damage or erosion to landscaping or paving. Also provide continuous snow guards on each side of the roof, standing seam pipe style guards that mount to the ribs of the standing seam roof system.

(j) Main entrance doors at the lobby shall be an aluminum storefront system. Other exterior doors at corridors shall be an aluminum storefront system or full-glazed hollow metal. Doors, door frames, glazing, and supporting structure must comply with the Force Protection requirements of UFC 4-010-10.

(k) Exterior non-entrance doors and frames opening to spaces other than corridors of lobbies shall be hollow metal complying with ANSI A250.8/SDI 100. Doors shall be level 3, physical performance Level A, Model 2; insulated; top edge closed flush. Frames shall be level 3, 14 gauge, with continuously welded corners and seamless face joints. Doors and frames shall be constructed of hot dipped zinc coated steel sheet, complying with ASTM A653, Commercial Steel, Type B, minimum A40 coating weight; factory primed. Anchors and accessories shall be zinc

coated, plaster guards, and shall be grouted solid. Fire-rated openings shall comply with NFPA 80, and the requirements of the labeling authority. Doors, door frames, glazing, and supporting structure must comply with the Force Protection requirements of UFC 4-010-10.

(1) Hinges. ANSI/BHMA A156.1; template, full mortise, heavy duty, ball bearing, minimum size 114mm x 114 mm, non-ferrous base metal, non-removable pins.

(2) Locksets. ANSI/BHMA A156.13; series 1000, Grade 1 mortise locksets, non-ferrous base metal, removable core. For high security areas provide LKM – 7003E series locksets.

(3) Exit (Panic) Devices. ANSI/BHMA 156.3; heavy-duty touchpad type, through-bolted mounting. Listed and labeled for panic protection based on UL 305.

(4) Closers. ANSI/BHMA A156.4; series C02000, Grade 1, hydraulic, factory-sized, adjustable to meet field conditions. Provide for all exterior doors, all doors opening to corridors, and as otherwise required by codes. At all exterior doors provide overhead holders or closers with hold-open capability. Also coordinate additional closer locations with users.

(5) Auxiliary Hardware. ANSI/BHMA A156.16. Provide wall or floor stops for all exterior doors that do not have overhead holder/stops. Provide other hardware as necessary for a complete installation.

(6) Thresholds. ANSI/BHMA A156.21; non-ferrous metal. Provide at all exterior doors.

(7) Weatherstripping. ANSI/BHMA A156.22. Provide at all exterior doors.

(8) Kick Plates. ANSI/BHMA 156.6; non-ferrous metal. Provide at all doors with closers.

(l) Exterior Windows. Provide aluminum windows complying with American Architectural Manufacturers Association AAMA/NWWDA 101/I.S.2. Minimum performance class shall be Heavy Commercial (HC). Minimum wind load, and resulting design pressure and the performance grade shall be determined in accordance with the IBC. Provide windows with insulating laminated tinted low-E glass and thermal break necessary to achieve a minimum Condensation Resistance Factor (CRF) of 45. Finish shall be Architectural Class I anodic coating or AAMA 2605 organic coating. Design of glass, glazing, frames, connections and structure shall comply with force protection requirements of UFC 4-010-10 and the blast pressures defined for this site and meet all other code requirements.

(1) Storefront Systems. Provide swing-type aluminum doors and storefront frames of size and design sufficient to withstand design minimum wind load, and with resulting design pressure determined in accordance with the IBC. Deflection shall be limited to not more than 1/175 times the length of the member, with a safety factor of not less than 1.65. Provide glazing beads, moldings, and trim of not less than 0.050 inch nominal thickness. Provide doors complete with frames, framing members, sub-frames, transoms, adjoining window wall, trim, and accessories. Provide windows with laminated tinted insulating glass and thermal break to achieve no water penetration at a pressure of 8 pounds per square foot of fixed area, and air infiltration not to exceed 0.06 cubic feet per minute per square foot of fixed area at a test pressure of 6.24 pounds per square foot. Finish shall be Architectural Class I anodic coating of AAMA 2605 organic coating. Design of glass, glazing, frames, connections and structure shall comply with force protection blast pressures designed for this site, and other code requirements.

(m) Thermal Insulation. Provide exterior wall, floor and roof/ceiling assemblies with thermal transmittance (U-values) required to comply with the energy calculations for this facility. Insulation shall not be installed directly on top of suspended acoustical panel ceilings. The building envelope shall comply with ASHRAE Standard 90.1

(n) Dock Leveler. Provide hydraulic dock leveler with integral steel safety lip barrier, automatic return to dock feature, and full-range free float.

(o) Accessible Flooring. Provide 24-inch high, stringer type floor system with adjustable pedestals and readily removable aluminum floor panels with factory installed static dissipative tile finish for each individual section or piece of access floor. Panels shall be capable of supporting a concentrated load of 2000 pounds placed on a one square inch area at any location on the panel. Panels shall be capable of supporting a uniform load of 500 pounds placed on one square foot area at any location on the panel.

6.5.3. Programmable Electronic Key Card Access Systems:

(a) All locking systems shall comply with keyless entry standards. Install programmable electronic key card access systems in the Information Systems facility per Army Installation Design Standards, paragraph 3.5.11, Locks and Locking Devices.

(b) High Security Doors: Doors for vaults, secure document storage rooms, SIPRnet communications rooms, NIPRnet Data rooms, and similar spaces requiring a high level of physical security shall be provided with locks complying with the requirements contained in the security standards referenced for spaces designated under Functional Area Requirements paragraphs. These may include combination locks and other special hardware.

6.5.4. INTERIOR DESIGN

6.5.4.1 General Guidance

(a) Interior design guidelines are addressed in UFC 4-171-05, section 2.9 and 3.6. In the UFC, where finishes are indicated as "preferred" or are listed first, with alternative finishes noted, the preferred or first-listed finishes are the minimum requirement of this RFP. Additional project specific requirements are listed below.

(b) The Army Reserve has selected four basic Modular Design System color palettes for interior design; coordinate the approved color scheme selection for this project with the project team. All finish materials and colors selected for use for this project are to conform to this color palette.

(c) Carpet shall meet AATCC 174 test method for anti-microbial properties. A passing carpet must pass either Part I or Part II and Part III. The face and the back of the carpet must show no growth.

(d) The DOIM Facility will be designed using USGBC (United States Green Building Council) LEED 2009 for New Construction v3 and be certified building (50 – 59 points).

6.5.4.2 Floors

(a) Non-combustible construction is preferable, even where combustible materials are allowed by code. Floor finish materials shall be as specified in the Design Guide; where "preferred" flooring materials are listed in the DG, the preferred flooring shall be the minimum requirement for this project, unless noted otherwise in this RPF.

(b) Coordinate desired locations of safes with Users and ensure floor design accommodates the weight of safes.

(c) Industry standard aluminum access flooring in areas where required. Coordinate requirements and locations with Users and Corps Interior Designers.

6.5.4.3 Ceramic Floor Tile

Comply with ANSI A 137.1 and the recommendations of Tile Council of America (TCA) Handbook For Ceramic Tile Installation. Provide marble threshold under doors where a ceramic tile floor meets a different floor finish.

6.5.4.4 Interior Walls and Partitions

(a) Non-combustible construction is preferable, even where combustible materials are allowed by code. All stud partitions shall be steel stud.

(b) Metal Support Systems. Non-load bearing metal studs and furring shall comply with ASTM C 645; stud gauge shall be as required by height and loading, but shall not be less than 20 gauge. Maximum stud spacing: 16 inches on center. Provide galvanized finish.

(c) Gypsum Board. Comply with ASTM C 1396. Minimum panel thickness shall be 5/8 inch. Provide Type X panels in fire-rated assemblies. Provide moisture resistant panels at locations subject to moisture. Provide abuse-resistant panels for corridors and other areas of likely high circulation use. Joint treatment: ASTM C 475. Screws ASTM C 646. Drywall installation: ASTM C 840.

(d) Tack surface applied to walls shall be a manufactured product designed for the purpose approximately three sixteenths (3/16) inch thick, rubberized and shall be self healing. Tack surface shall have a finish edge trim.

6.5.4.5 Ceilings

Non-combustible construction is preferable, even where combustible materials are allowed by code. Provide access panels where required for access to equipment or controls.

6.5.4.6 Casework

(a) Vanity Countertop at Toilets. Countertops shall be solid surfacing material minimum 19 mm (3/4-inch) thick, with integral coved backsplash. Substrate shall be two layers of 19 mm thick exterior grade plywood. Reinforce countertop with concealed steel angles so that top will not deflect more than 5 mm when 115 kg load is applied at mid-span. Comply with AWI Section 400 Custom Grade requirements.

(b) Other Casework. Provide architectural casework complying with AWI Section 400, Custom Grade cabinets with high pressure decorative laminate finish meeting NEMA LD3 standards. Horizontal laminate: nominal 1.27 mm thick; vertical laminate: nominal 0.71 mm thick. Door and drawer edges shall be heavy duty 3 mm extruded polyvinyl chloride with self-locking serrated tongue. Work surfaces and counter shall be high pressure decorative laminate, or solid surfacing material.

6.5.4.7 Window Treatments

Provide horizontal aluminum mini-blinds at all interior and exterior windows in core areas, except windows and storefront in corridors. Blinds shall have 25.4 mm wide x 0.2 mm thick slats with anti-static, anti-microbial polyester baked enamel finish. Provide heavy duty 25.4 mm x 38.1 mm steel head rail, and tubular steel bottom rail finished to match slats. Provide window blinds at all exterior windows, except in Lobby and at door sidelights. Color should be off-white.

6.5.4.8 Corner Guards

Provide wall and corner guards in high-traffic areas to match wall color. Provide steel angle corner guards or bollards at wall corners and in low-traffic areas.

6.5.4.9 Column Enclosures

If not required by code, provide gypsum board column enclosures, finished and painted, for all exposed columns in the walls of offices, classrooms, open office areas, simulation suites, break room, lobby, corridors, toilets, mail room, and similar finished or normally occupied spaces. Columns in building service spaces and other utilitarian spaces may be painted and left exposed, unless enclosure is required by code.

6.5.4.10 Fire Extinguishers

Provide fire extinguishers in accordance with generally accepted practices. Provide recessed or semi-recessed fire extinguisher cabinets in occupied areas. Provide surface-mounted fire extinguisher cabinets in storage and mechanical/electrical spaces.

6.5.4.11 GFGI Office Equipment

(a) Provide power and data connections as required for GFGI office equipment. Coordinate specific equipment requirements and locations with Users.

(b) Typical storage shelving shall be metal storage shelving, and nominal 24 inches in depth.

6.5.4.12 Furniture and Equipment

(a) The Contractor shall provide design and design documents (Comprehensive Interior Design or CID), as described in this RFP, for the furniture and some equipment that is to be purchased and installed by the Government (Government-furnished, Government-installed or GFGI). Preliminary furniture layout is provided on

the drawings. Coordinate furniture requirements with the Louisville Corps of Engineers Interior Designer and UFC 4-171-05 Army Reserve Facilities.

(b) Provide design and other required documentation for furniture in all spaces as indicated on floor plans, furniture plans and specifications.

(c) The Government will purchase and install the furniture, using the Contractor's design documents and information. Furniture is shown and called out on the "F" series drawings. The Contractor is responsible for coordinating its work with the furniture, and for connection of power, voice and data cabling and devices to the workbenches and system furniture once it is installed. Contractor shall base the design of the office workstation furniture on commercial furniture manufacturer products. The Government has already performed a study establishing commercial furniture manufacturer as the provider for this project.

(d) Unless otherwise noted, seating will be by UNICOR.

6.5.4.13 References for Interior Design

6.5.4.13.1 UFC 4-171-05 Army Reserve Facilities

6.5.4.13.2 UFC 3-120-01 Air Force Sign Standard

6.5.4.13.3 UFC 3-120-10 Interior Design

6.5.4.13.4 US Army Reserve Centers/Facilities Approved Color Schemes (Inspired by Blue, Red, Green and Rust), current version

Interior building signage requirements:

(a) Interior Signage. Comply with requirements of ADAAG and UFAS. Provide interior room identification signage for all rooms, directional signage, and building directory in corridor at main entry. Coordinate locations with User. List all rooms which require room identification signage; coordinate with the installation interior signage standard, if one exists.

UFC 3-120-01, Air Force Sign Standard, has been accepted by the services as the signage criteria. Note that it has no A, N, or F subscript. It is the signage criteria without Army exception or supplement, and should be substituted for the TM reference in the Installation Design Standards. The document is available at: HYPERLINK "http://www.hnd.usace.army.mil/techinfo/UFC/UFC3-120-01.pdf"<http://www.hnd.usace.army.mil/techinfo/UFC/UFC3-120-01.pdf>

(b) Provide the following visual communication boards: verify number and approximate locations of visual communications boards/bulletin boards with Users.

6.6. STRUCTURAL DESIGN

6.6.1 General Requirements

Structural requirements noted herein shall be used for the structural design and construction of the overall facility including building and non-building components.

Construction documents including structural design drawings shall be stamped and signed by a professional engineer registered in the State of Wisconsin.

The building structural system shall be compatible with the intended building functions and designed to permit flexibility, where possible, in future reconfigurations of the interior space.

Exterior ground mounted equipment shall be located on concrete equipment pads.

Roof mounted equipment shall not be permitted, unless otherwise approved by the government.

6.6.2 Structural Building Work

The structural building work consists of, but is not limited to, design and construction of the following:

Foundations. Cast-in-place concrete foundation system (spread footings, continuous wall footings, grade beams, piles, etc), overexcavation requirements including removal of poor soils, use of concrete piles or drilled piers, dewatering requirements for groundwater, minimum frost depth from finish grade to bottom of exterior concrete foundation, and mitigation of expansive soils when present shall be in accordance with recommendations by Contractor's Geotechnical Engineer. All below grade structures shall be cast-in-place reinforced concrete. Floor slabs shall consist of reinforced cast-in-place concrete using deformed bars spaced at 16-inch oc maximum; welded wire fabric shall not be permitted. Continuous 10-mil minimum vapor retarder shall be used under all interior concrete slabs-on-ground. Recessed concrete slabs on ground for raised access flooring shall be waterstopped at all construction joints and shall be sloped a minimum 1/8-inch per foot to a sump(s). Concrete slabs on ground shall be recessed for flooring systems where required.

Concrete Pipe Entry Vault. Provide concrete pipe entry vault for fire and domestic water lines entering building. Construction joints shall be waterstopped.

Exterior Wall Systems. Preferred exterior structural wall system is reinforced CMU or cast-in-place concrete load bearing shear wall system. Structural steel moment frames may be used as an alternate. Cross bracing systems, load bearing metal stud wall systems and prefabricated metal buildings are not permitted, unless otherwise approved by government.

Exterior Columns. Reinforced concrete or CMU piers, pilasters, or columns shall be used along the exterior of the building. Steel columns used in combination with structural steel moment frames may be used as an alternate. Columns and pilasters shall have minimal impact on room spaced and shall be furred out and concealed.

Interior Columns. HSS steel columns provided in a uniform layout as much as possible. Interior columns shall be located within interior walls where possible; minor protrusions with furring are permitted.

NIPRNET Data Center. Interior columns are not permitted within the NIPRNET Data Center room. Structural roof members including ridge girder and transfer beams/girders where required shall be designed to clear span this room to meet this requirement.

Roof Framing Members. Steel beams and girders, open web steel joists and joist girders, and structural steel truss systems are permitted.

Roof System. Roof system shall be gabled with 3:12 minimum roof pitch and shall include structural metal deck diaphragm consisting of 1-1/2 inch, 20 gage minimum, galvanized metal roof deck.

Non-Load Bearing Walls. Interior walls shall consist of metal stud wall construction where possible.

Ceiling Support Grid System. Ceiling Support Grid System. Ceiling support grid system consisting of roof supported and laterally braced Unistrut type members and shall extend horizontally in a uniform grid layout not to exceed 8-foot on-center for support of architectural, mechanical, and electrical components and systems including interior walls, ducts, and conduits.

Truck Loading Dock. Cast-in-place reinforced concrete including concrete retaining walls as required.

Miscellaneous. Grating and handrail, where required, shall be hot dipped galvanized steel. All structural steel shall be shop primed. Concrete anchors located in exterior applications shall be galvanized or stainless steel.

Connection Details. All interconnections of structural members including foundations, walls, framing members, slabs, roof deck, etc.

Non Structural Connections. Consists of architectural, mechanical and electrical elements to the structural systems. Includes any special detailing for attachments of such items for seismic, wind and/or AT/FP resistance.

6.6.3 Structural Design Criteria

General Requirements. Structural design including deflection limitations and loads not specified herein shall be in accordance with the 2009 International Building Code (IBC).

The structural systems selected shall conform to all applicable criteria and performance requirements as well as industry standards and commonly accepted methods of practice.

Welding. Structural steel welding shall be design, fabricated, and inspected in accordance with AWS D1.1.

Concrete. Structural concrete shall have a minimum 28-day compressive strength of 4,000 psi. Exterior concrete foundations and concrete exposed to freezing temperatures during construction or operation of the facility shall have 3 to 6 percent air entrainment. Concrete for interior slabs on ground, not exposed to freeze/thaw conditions shall have a maximum air entrainment of 3 percent.

Concrete Masonry Units (CMU). CMU construction shall conform to ASTM C90, use Type S mortar, and have minimum 28-day compressive field strength of 1,500 psi of the completed assemblage.

Minimum Live Load Requirements. All building floor live loads shall be determined in accordance with the International Building Code (IBC) where not specifically noted below.

-Floor – 150 psf.

-Assembly Areas – 150 psf.

-Mechanical Rooms – 150 psf.

-Electrical and UPS Rooms – 300 psf.

-Roof – 20 psf.

Ceiling Support Grid System. Designed and detailed for a minimum 15 psf capacity.

Occupancy Category. Nature of Occupancy is IV.

Wind Loads. The structure shall be designed for a minimum wind speed of 90 mph, exposure C.

Seismic Loads. Seismic spectral response factors of $S_s = 0.06g$ and $S_1 = 0.03g$; Site classification shall be "D" unless otherwise determined by Contractor's Geotechnical Engineer based on final geotechnical report.

Snow Loads. Ground snow load – 40 psf. Snow drifting, unbalance snow loads, and snow loads on eave extensions shall conform to IBC requirements.

Frost Depth. Distance from finish grade to bottom of exterior concrete foundation shall conform to Contractor's Geotechnical Engineer based on geotechnical report.

Equipment Live Loads. Applicable areas of floor structures shall be designed for the weights, dynamic loads and other effects of mechanical and electrical equipment, wheeled vehicles, forklifts, material handling equipment and any permanently mounted equipment. Minimum design vehicle loads shall conform to AASHTO HS 25.

6.6.4 LEED Requirements.

The DOIM Facility will be designed using USGBC (United States Green Building Council) LEED 2009 for New Construction v3 and be certified building (50 – 59 points).

6.7. THERMAL PERFORMANCE

6.7.1 Building and Data Center Envelope Sealing Performance Requirements

6.7.1.1 Design and construct the building envelope with a continuous vapor barrier to control transmission and condensation of water vapor through the building envelope assemblies. Clearly identify and address all vapor

barrier components of each envelope assembly on construction documents and detail the joints, interconnections, and penetrations of the vapor barrier components. Clearly identify and address the boundary limits of the building vapor barrier on construction documents.

6.7.1.2 Trace a continuous plane of vapor-tightness throughout the building envelope. Make flexible and seal all moving joints.

6.7.1.3 Design and construct the data center envelope with a continuous vapor barrier to control transmission and condensation of water vapor through the data center envelope assemblies. Clearly identify and address all vapor barrier components of each envelope assembly on construction documents and detail the joints, interconnections, and penetrations of the vapor barrier components. Clearly identify and address the boundary limits of the data center vapor barrier on construction documents.

6.7.1.4 Trace a continuous plane of vapor-tightness throughout the data center envelope. Make flexible and seal all moving joints.

6.7.1.5 The vapor barrier material shall be equivalent to 10 mil thick minimum polyethylene sheeting, ASTM D4397, with a vapor permeance not to exceed 1 perm when tested in accordance with ASTM E96.

6.7.1.6 Join and seal the vapor barrier material of each assembly in a flexible manner to the vapor barrier material of adjacent assemblies, allowing for the relative movement of these assemblies and components.

6.7.1.7 Seal all penetrations in the vapor barrier. If any unavoidable penetrations of the vapor barrier by electrical boxes, plumbing fixture boxes, and other assemblies are not vapor-tight, make them vapor-tight by sealing the assembly and the interface between the assembly and the vapor barrier or by extending the vapor barrier over the assembly.

6.7.1.8 The vapor barrier must be durable to last the anticipated service life of the assembly of 25 years.

6.7.1.9 Do not install lighting fixtures with ventilation holes through the vapor barrier.

6.8. PLUMBING

6.8.1 Piping Materials

The following materials shall be used for all piping systems in the services listed:

6.8.1.1 Potable Cold Water: Above floor: Type L copper. Below floor: Type K copper. Insulate above-floor piping to protect against condensation.

6.8.1.2 Potable Hot Water: Type L copper. Insulate all potable hot water piping.

6.8.1.3 Recirculated Potable Hot Water: Type L copper. Insulate all recirculated potable hot water piping.

6.8.1.4 Sanitary Drain and Vent: Hubless cast iron soil pipe above floor. Hub and spigot cast iron soil pipe below floor.

6.8.1.5 Natural Gas: Schedule 40 black steel.

6.8.2 Cross Connection Control

Utilize reduced pressure-principle backflow prevention (RPBP) devices for protection of potable water supplies against contamination.

6.8.3 Waterless Urinals

Design restroom fixture and drain layout such that water-consuming devices discharge upstream of the waterless urinals, providing a wash-down stream to help clear out any solids that may precipitate.

6.8.4 Protection of Data Centers

6.8.4.1 Provide containment measures to protect against water entering the Data Centers or IT spaces from broken or leaking pipes in restroom groups. Coordinate with architectural and structural design to incorporate containment features, with particular emphasis on concealed piping and plumbing chases, and spaces adjacent to the Data Centers where water-consuming fixtures are installed.

6.8.4.2 Provide a containment sump under the raised floor of the Data Center, with duplex pumps (one standby), to allow collection and automatic removal of any liquid water entering the Data Center due to a severe leak from humidification equipment or any other source. Provide a critical alarm to the building DDC system to indicate that a severe leak has occurred.

6.8.5 Domestic Hot Water Recirculation

Provide domestic hot water recirculation to all plumbing fixtures requiring hot water.

6.8.6 Domestic Hot Water Generation

6.8.6.1 Do not utilize roof-mounted equipment for any service, including solar hot water generation, at the Ft. McCoy DOIM facility.

6.8.6.2 Utilize natural gas-fired, high-efficiency condensing water heaters for domestic hot water generation, as necessary to supplement solar hot water heating.

6.8.7 LEED Requirements

Provide plumbing fixtures and trim that comply with the LEED requirements stated previously in this document to obtain a LEED Silver rating for this facility.

6.8.8 Additional Criteria

The following industry and military criteria are applicable to the plumbing design of the Ft. McCoy DOIM facility. See also Paragraph 4 for industry and military criteria applicable to all USACE design projects.

6.8.8.1 UFC 3-230-10A Water Supply: Water Distribution

6.8.8.2 UFC 3-420-01 Plumbing Systems

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1 Utility Information

Primary power on Ft McCoy is owned and operated by Xcel Energy. Kaye Crook (608-269-0168 ext.14) is the electrical point of contact at Xcel. Contact with the utility company shall be coordinated through the resident engineer. Power to the new DOIM facility will be provided from the power pole on the east side of the parking lot as shown on the site plan. Xcel will provide the primary conductors from the power pole to the transformer, the transformer, and secondary conductors from the transformer to the CT cabinet. The CT cabinet is required by the utility for a point of demarcation, even though no utility meter will be required for this facility, since the feed is metered at the substation. The contractor shall provide conduits as required (5 inch) for the primary feed that are concrete encased, conduits as required (5 inch) from the transformer to the CT cabinet, and the secondary feed from the CT cabinet to the facility switchgear. The CT cabinet shall be mounted adjacent to the utility transformer on the same pad. For approximate location of the utility transformer and CT cabinet, see the site plan.

6.9.2 Loads

The following is a preliminary electrical load estimate for the new DOIM facility for bidding purposes. The contractor is responsible for performing final load calculations which shall be used for the final sizing of all electrical equipment, including but not limited to the generator, UPS system, all distribution equipment, and utility transformer. Final load calculations must be submitted to the government for review prior to final sizing of

equipment. Equipment must be sized with a 25 percent spare/space capacity above the calculated load. For a list of the loads required to be on generator and UPS power, see the facility electrical section.

Preliminary Electrical Load Estimate

Loads on UPS	Connected Load (kVa)	Demand Factor	Demand Load (kVA)
NIPRNET Data Center Racks	134.4	1.0	134.4
SIPRNET Data Center Racks	13.44	1.0	13.44
TER Room Racks and Wall Outlets	25	1.0	25
EF Room Racks and Wall Outlets	17	1.0	17
Networking/Ops Center Office Eqpt.	5	1.0	5
TOTAL	194.84		194.84
TOTAL + 25% Safety Factor			244
Loads on Generator	Connected Load (kVa)	Demand Factor	Demand Load (kVa)
Loads on UPS	194.84	1.0	194.84
HVAC in Critical Areas	91	0.8	72.8
Lighting in Critical Areas	5.5	1.0	5.5
MISC	15	0.8	12
TOTAL	291.34		273.14
TOTAL + 25% Safety Factor			341
Loads on Utility Power Only	Connected Load (kVa)	Demand Factor	Demand Load (kVa)
Loads on Generator	273	1.0	273.14
MISC	30	0.8	24
HVAC Not on Generator	111	0.8	88.8
Interior Lighting	21	1.0	21
Exterior Lighting	4.7	1.0	4.7
Office Equipment	56.3	1.0	56.3
General Purpose Receptacles	18.4	100% of 1st 10kVa, 50% of Remaining	14.2
TOTAL	515		482.14
TOTAL + 25% Safety Factor			603

6.9.3 Loading Dock Drop Arm

The drop arm at the loading dock shall be provided with an intercom system and keypad. The intercom shall call back to the Supply Office, and provisions for opening the drop arm shall be provided in the supply office.

6.9.4 Site Telecommunications

The service to building that will meet the needs of the new facility shall be of multi pair UTP copper RUS/REA PE-89 and Single mode fiber. This project shall provide provisions for connectivity to the incoming cable plant. This project shall provide Multi-pair UTP copper (RUS/REA PE-89) and outside Singlemode fiber. This project shall provide protector blocks for copper cable and fiber distribution panels (FDU's) for fiber entering the telecommunications room.

Provide one 288 strand Singlemode fiber optic cable and one 200 multi-pair copper cable from the Entrance Facility in the new NEC building to the DCO building. Path from DCO, shall be as follows: from DCO building thru Cable vault to MH-1501(250') to MH-1546 (521') to MH-1456 (298') from MH-1456 to the Entrance Facility of the new NEC building provide a new ductbank (500'), (6) 4" conduits. Provide a 20' service coil in all manholes and on each end of cable runs. From MH-1456, provide (6) 4" HDPE 4" conduits, provide within (2) 4" conduit, (3) 1 1/4" innerduct for fiber.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1 Generator Requirements

The generator for this facility shall be located outside adjacent to the parking lot as shown on the site plan. The generator shall be housed in a weather proof enclosure with a maximum sound rating of 60dB at 25 feet. A fuel tank shall be provided that is UL142 listed with double wall containment, UL2085 ballistic rated, and have capacity to run all loads on the generator for a minimum of 48 hours. The generator must be direct drive and capable of handling the UPS loads listed in the previous section. The generator must meet all current EPA emissions requirements. The contractor is responsible for startup and commissioning of the generator in accordance with the manufacture's recommendations. Commissioning shall include but not be limited to testing the generator with a load bank provided by the contractor to insure the generator can handle startup and transitioning the loads listed below back to utility power without incident. Transition from generator to utility shall be a closed transition.

Also, provisions for connecting a portable generator shall be provided as shown on the oneline diagram. The contractor is responsible for providing a portable generator for testing the standby system.

The generator, fuel tank, and installation of these components shall be part of a bid option as stated above in this document. For additional requirements for the generator and distribution system, see the oneline diagram on drawing E-1.1.

Switching the generator from diesel-drive to natural gas shall be a betterment to the project and priced separately.

The following loads shall be on generator backup power (Labeled as "Critical Loads" on the Oneline):

- All loads that are on UPS backup.

- Minimal amount of HVAC required to keep the following areas functional: NIPR data center, SIPR data center, Network Ops Center, TER room, EF room, Main Electrical room, and UPS room.

- Lighting in the following areas: NIPR data center, SIPR data center, Network Ops Center, TER room, EF room, Main Electrical room, and UPS room.

- All life safety devices including fire alarm and mass notification devices.

- Lighting and workstation receptacles in the director's office.

- Egress Lighting.

- Minimal amount of HVAC required to keep plumbing and fire suppression systems from freezing.

6.10.2 Main Switchgear

The main switchgear for the facility will be located in the main electrical and will have draw out breakers for the main and permanent generator. Transfer capability between utility and generator power will be closed transition.

6.10.3 UPS Requirements

The UPS for this facility shall be installed in the UPS room. The UPS shall have system bypass and maintenance bypass capabilities. The UPS system shall have a double conversion topology, regulated output voltage and frequency, a minimum of a .9 leading power factor, a minimum of 93 percent efficiency at 50 percent rated load, and an input current distortion of less than 3 percent. The UPS bypass system shall be sized so that it can accommodate the addition of a redundant UPS module and Battery Cabinet in the future as shown on the online diagram. The UPS system shall have a minimum of a 3 year parts and labor warranty coverage.

The batteries for the UPS system shall have a minimum of 5 minutes of run time to support all the loads powered by the UPS system. Batteries for the system shall be specially designed for use in UPS systems and shall be capable of being used for a minimum of 260 cycles at 100 percent discharge. Batteries shall have analytical grade electrolyte. Batteries shall have a minimum of a 3 year parts and labor warranty coverage. A disconnect shall be provided between each battery cabinet and the UPS system. A quick disconnect shall also be provided between battery tray assemblies. The system shall include advance battery management technology.

The following loads shall be on UPS backup power:

- All cabinets in the NIPR data center
- All cabinets in the SIPR data center
- All workstations and TV outlets in the Network Ops Center
- All racks and wall outlets in the TER room
- All racks and wall outlets in the EF room
- All Access Control and Intrusion Detection Systems
- All DDC controls for HVAC systems on generator backup power

The contractor is responsible for the startup and commissioning of the UPS system, including all battery strings. The contractor shall test the UPS system using a load bank to ensure that the system is capable of handling the loads stated previously for the specified time period.

6.10.4 Cabinet Electrical Connections

All cabinets in the NIPR and SIPR datacenters shall be fed from PDUs with two separate plugs and matching receptacles. Plug types and configurations shall be coordinated with the NEC users during the design process. The NIPR data center shall have provisions for four NetApp System cabinets, and the SIPR datacenter shall have provisions for one. Cabinet feeds shall be redundant, with each feed from separate PDU. PDU's must be located in the same room as the cabinet they are feeding. The NIPR datacenter shall have a full capacity to support a total of 40 cabinets. The SIPR datacenter shall have a full capacity to support a total of 4 cabinets.

A mushroom button type Emergency Power Off (EPO) disconnecting means shall be provided in the SIPR and NIPR datacenters to shut down power to all racks in that room.

6.10.4.1 TER/EF Rooms Electrical Connections

Both the TER and EF rooms shall have a dedicated panel that feeds all loads in that room. Racks in these rooms shall be connected with L6-20 plugs and matching receptacles.

6.10.5 Interior Electrical Distribution System

The interior electrical distribution system shall be installed in accordance with the requirements of the National Electric Code, UFC 3-520-01, UFC 4-171-05, and the army reserve IT manual.

6.10.6 Grounding

Grounding shall be installed in accordance with the National Electric code, UFC 3-520-01 and the additional requirements of the army reserve IT manual.

6.10.7 Lighting

Lighting shall be installed in accordance with the requirements of the National Electric Code, UFC 3-520-01, UFC 4-171-05, and UFC 3-530-01.

6.10.8 LEED Requirements

The contractor is responsible for providing electrical and lighting systems that comply with the LEED requirements stated previously in this document to obtain a LEED Silver rating for this facility.

6.10.9 Additional Criteria

The following industry and military criteria are applicable to the electrical design of the Ft McCoy DOIM facility. See also Paragraph 4 for industry and military criteria applicable to all USACE design projects.

6.10.9.1 TM 5-694 Commissioning of Electrical Systems for Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities

6.10.9.2 AR 380-5 Department of the Army Information Security Program

6.10.9.3 MILHBK 1013/1A Design Guide for Physical Security of Facilities

6.10.9.4 NSTISSAM TEMPEST/2-95 Red/Black Installation Guidance

6.10.9.5 I3MP Installation Information Infrastructure Modernization program Guide for Facilities requirements of Core Communications nodes

6.10.9.6 Army Reserve IT Manual Information Technology Design and Construction Guide

6.10.9.7 MIL HDBK 1004/6 Lightning Protection

6.10.9.8 DoD 5200.1-R Information Security Program

6.10.9.9 UFC 3-520-01 Interior Electrical Systems

6.10.9.10 UFC 3-530-01 Design Interior and Exterior Lighting Controls

6.10.9.11 UFC 3-550-01 Exterior Electrical Power Distribution

6.10.9.12 UFC 3-550-03FA Electrical Power Supply and Distribution

6.10.9.13 UFC 4-171-05 Army Reserve Facilities

6.10.10 Telecommunications

Horizontal UTP cabling for voice/data shall be rated Category 6. Horizontal cabling will be terminated on 8-pin modular jacks at patch panels in the Communications Room and at the work area outlet boxes (two cables per outlet). Provide two telecommunication outlet per work area cubicle each. Coordinate cable drop count at each work area outlet with end user for special area requirements. Wiring scheme will be T568A.

- NIPRNet cabling will run in unclassified cable trays and or conduits along with other unclassified telecommunications cable.
- SIPRNet cabling will be run in classified cable trays.
- SIPRNet and NIPRNet cabling in conduit to work area outlets will be kept separate.

All SIPRNet will be supported within one room (SIPRNet Cafe). Provide exposed pathways and work area outlets. Pathways and devices must adhere to AFSSI 7703 (2008), NSTISSI 7003 (1996) and JAFAN 6-9 (2004).].

Obtain a copy of any requirements and/or guidelines for telecommunications service installation from the Ft. McCoy DOIM. Provide equipment and work in compliance with the requirements and guidelines.

Cable trays will be provided within the Telecommunication Rooms. Trays will be designed for maximum 40% fill, with 100% spare capacity.

Provide outlet boxes for telecommunications outlets with 1" conduits stubbed to nearest cable pathway or telecommunication room. Outlet boxes will be 4 11/16" X 4 11/16" X 2 1/4".

The Communications Room will be equipped with receptacles to serve all of the equipment cabinets and racks. The contractor is required to coordinate locations with the customer through the Contracting Officer's technical representative.

This project will provide racks needed to terminate cable. The racks provided in the Communications Room will be for 19-inch-wide equipment.

All active equipment will be GFE provided by the Government rather than by the construction contractor. The construction contractor's responsibility stops at the patch panels/fiber centers in the cabinets or racks.

The Communication room walls shall be lined with AC grade or better, void free plywood, 8' X 4' X 3/4 ". Plywood should be fire-rated or treated on all sides with two coats of fire-resistant paint. Provide within the Classified data center (4) 7' cabinets with fan kits and power strips, provide within the Unclassified data center (40) 7' cabinets with fan kits and power strips. Provide cabinets to support 19-inch-wide equipment.

All racks shall be laterally braced in each direction. All telecommunication racks shall be anchored to concrete floor slab.

The telecommunications ground system will be provided as recommended by EIA/TIA 607.

A separate dedicated telecommunication ground system will be provided and will be interconnected to the electrical ground at the electrical service entrance equipment. The proposed grounding system shall be indicated on the drawings.

6.10.11 Audio Video Systems

Conduit shall be provided with pull string, in locations supporting A/V equipment (to support video data cable from laptop to overhead projector). Solid mounting locations shall also be provided where ceiling mounted projectors are planned. A/V conduit must be 1 1/2" minimum. Standard collateral connectivity shall be provided on all 4 sides of each conference room/meeting area. Also standard collateral connectivity shall be provided in a floor box underneath each planned conference/meeting table/podium location. Also power outlets shall be provided at podium locations, under conference tables, and in overhead locations to support projection equipment as needed.

6.10.12 Cable Television (CATV)

Coordinate CATV service with the local CATV service provider. Confirm in writing the service provider's requirements for an underground cable distribution line service. Provide the local service provider with a dimensioned site plan and additional information as required to properly coordinate and order CATV service to the facility. Pay required installation fees; initiate application for service; assist the Government in completing

application for service, accepting installation of service, and start-up of service. Coordinate point of demarcation to be located in the new building Telecommunications Room (EF). Coordinate with end user for CATV install.

6.10.13 Security

The Access Control System (ACS) for the new DOIM facility shall be contractor furnished and contractor installed. The ACS shall be CAC card compatible and FIPS 201 compliant. The following areas require Access Control:

- All areas between the public and private side of the building
- All Main and Auxiliary entrances to the building including the Storage Room
- SIPR and NIPR data centers
- SIPRnet Café and SIPRnet data center require Access Control, CDX09 lockset, and LKM 7003
- Drop arm gate

The Intrusion Detection System (IDS) for the new DOIM facility shall be Government Furnished and Government Installed. The IDS system will be Advantox Infaguard. The contractor is responsible for installing all conduit and boxes for the intrusion detection system. The following areas will require Intrusion Detection:

- SIPR and NIPR data centers
- SIPRnet Café

The NIPR data center requires a dedicated IDS system. The SIPR datacenter and SIPRnet Café can share an IDS system, but there must be a dedicated IDS panel in each space. Both IDS systems must connect back to the TER room for event reporting and system status.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11.1 Outdoor Design Conditions

Maintaining indoor temperature and humidity conditions in the Ft McCoy DOIM facility is critical. Design HVAC systems using the 0.4 percent dry bulb and corresponding mean coincident wet bulb temperature for cooling. Design HVAC systems using the 99.6 percent dry bulb temperature for heating.

6.11.2 HVAC System Overview

6.11.2.1 Administration and auxiliary areas of the facility shall be served by a central station VAV air handler with economizer, chilled water coil, sound attenuator section, and humidity control sections as required to maintain indoor humidity levels within prescribed limits. Building heat shall be provided by high-efficiency condensing natural gas-fired hot water boilers. Provide a dedicated air-cooled chiller and primary/secondary pumping to serve the VAV system.

6.11.2.2 Provide a separate air-cooled chiller and primary/secondary pumping system, connected to the backup power generator, to serve the critical HVAC equipment independently of the VAV system.

6.11.3 Space Specific HVAC Requirements

6.11.3.1 Indoor design conditions in NIPR data center and SIPR data center shall be maintained 24 hours per day, seven days per week. Design HVAC systems for the data centers to limit noise emanation from HVAC equipment. Do not utilize compressors within the data centers. Design HVAC systems serving these spaces for N+1 equipment redundancy, exclusive of the chiller. Design sequences of operation for equal run time of redundant equipment by alternating standby units. Coordinate HVAC design with equipment layout so that airflow from the HVAC equipment travels in a path parallel to the rows of equipment cabinets in a hot aisle/cold aisle arrangement. Temperature in

these spaces shall be maintained at $72 \pm 2^\circ$ F. Relative humidity in these spaces shall be maintained at $45 \pm 5\%$. HVAC and humidity control equipment serving these spaces shall be on generator backup power.

6.11.3.1.1 Design HVAC systems serving the data centers to accommodate 100% of equipment heat loads, including spare capacity and safety factor, as calculated in accordance with Paragraph 6.9, SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS.

6.11.3.2 Indoor design conditions in TER room and EF room shall be maintained 24 hours per day, seven days per week. Temperature in these spaces shall be maintained at 64° F heating and 78° F cooling. Relative humidity in the TER room shall be maintained between 30% and 55%. HVAC and humidity control equipment serving the TER and EF rooms shall be on generator backup power.

6.11.3.3 Indoor design conditions in the UPS room shall be maintained 24 hours per day, seven days per week. Temperature in this space shall be maintained at 68° F heating and 77° F cooling. Provide 100% exhaust and maintain UPS room at negative pressure relative to the building. HVAC equipment serving the UPS room shall be on generator backup power.

6.11.3.3.1 Design HVAC systems serving the UPS room to accommodate heat loads of installed equipment, plus adequate capacity for a redundant UPS cabinet, to accommodate future expansion.

6.11.3.3.2 Do not utilize roof-mounted equipment for any service, including UPS exhaust fans, at the Ft McCoy DOIM facility.

6.11.3.4 Indoor design conditions in Network Ops and Main Electrical room shall be maintained 24 hours per day, seven days per week. HVAC and humidity control equipment serving these spaces shall be on generator backup power.

6.11.3.5 Indoor design conditions in the SIPRNET Café shall be maintained during normal operation hours. SIPRNET Café shall be served by the central VAV system. SIPRNET Café at the Ft. McCoy DOIM facility does not require dedicated HVAC equipment, generator backup power, or N+1 equipment redundancy.

6.11.4 HVAC System Controls

6.11.4.1 HVAC systems shall be controlled by direct digital control (DDC) technology. Provide DDC systems and associated PC workstation with UPS and backup power for control of HVAC systems that are required to be on backup power.

6.11.4.2 Provide, for each DDC system, a PC workstation with all hardware and software necessary for user interface with the DDC and to provide a building point of connection (BPOC) for the future installation-wide Utility Monitoring and Control System (UMCS). Each PC workstation shall include, as a minimum, a 1,000 GB hard drive, 4 GB RAM, 24-inch LCD monitor, combination printer/fax/copier, Windows XP-based OS, and all hardware and software constituting both a dial-out modem and high-speed internet connectivity to allow integration into the future installation-wide UMCS. System shall be based on LonWorks protocol to facilitate an open-system approach to design of the future UMCS.

6.11.5 Protection of Data Centers

Provide moisture sensors under the raised floor of the Data Centers to provide leak detection for incidental drips from humidification equipment or any other source, and to provide early warning of severe leaks from any source. Provide a critical alarm to the building DDC system to indicate that moisture has been detected under the Data Centers.

6.11.6 Utility Metering Requirements

Electricity, gas, and potable water consumption shall be measured at the building and shall be metered and logged by the DDC system.

6.11.7 UMCS M&C Software

Ft McCoy currently does not have an installation-wide UMCS. DPW is in the process of developing the UMCS and implementation is expected to occur over the next two to three years as new facilities are constructed. Coordinate M&C software and UMCS interface requirements with Ft McCoy DPW. The installation point of contact for coordination with the future UMCS is Eric Schlichting, USA IMCOM (608-388-4557; eric.schlichting@us.army.mil).

6.11.8 LEED Requirements

The contractor is responsible for providing heating, ventilating, and air conditioning systems that comply with the LEED requirements stated previously in this document to obtain a LEED Silver rating for this facility.

6.11.9 Proposed Betterments

The following proposed betterments have been identified for the Ft McCoy DOIM facility. Additional betterments may be proposed by the contractor.

6.11.9.1 Water-Side Economizer. Due to the prevailing climate and design temperatures at Ft McCoy, and to assist in achieving LEED credits associated with innovation and energy conservation, water-side economizers on the chilled water system serving process loads have been identified as a potential cost-savings for long-term operations, as well as a means of extending the service life of the air-cooled chiller. Investigate the feasibility and economic benefits of incorporating technologies such as dry-bed coolers into the chilled water systems.

6.11.9.2 Exclusion of HVAC Equipment from Data Centers. The floor plan presented in Appendix J provides an opportunity to design the HVAC systems serving the data centers such that HVAC equipment can be installed within the mechanical room. This approach would facilitate maintenance and repair of the HVAC equipment and potentially reduce piping and energy costs associated with chilled water distribution. Investigate the feasibility and economic benefits of this approach in HVAC design for the data centers, while maintaining the physical security of the facility and moisture control measures specified above and in section 6.8 Plumbing.

6.11.10 Additional Criteria

The following industry and military criteria are applicable to the mechanical design of the Ft McCoy DOIM facility. See also Paragraph 4 for industry and military criteria applicable to all USACE design projects.

6.11.10.1 Army Reserve IT Manual

6.11.10.2 ASHRAE Guideline 3

6.11.10.3 ASHRAE Standard 52

6.11.10.4 ETL 1110-1-181, Procurement of Energy Efficient Liquid Chillers

6.11.10.5 ETL 1110-3-465, Design & Construction of Water Meters & Appurtenances at New Army Facilities

6.11.10.6 JAFAN 6/9, Physical Security Standards for Special Access Program Facilities

6.11.10.7 UFC 3-400-01 Energy Conservation

6.11.10.8 UFC 3-400-02 Design: Engineering Weather Data

6.11.10.9 UFC 3-401-01 LonWorks Utility Monitoring and Control System (UMCS)

6.11.10.10 UFC 3-410-02A Heating, Ventilating, and Air Conditioning (HVAC) Control Systems

6.11.10.11 UFC 3-450-01 Noise and Vibration Control

6.11.10.12 UFC 3-520-05 Stationary Battery Areas

6.11.10.13 UFC 4-030-01 Sustainable Development

6.11.10.14 UFC 4-171-05 Army Reserve Facilities

6.11.10.15 MILHDBK 1013/1A Design Guide for Physical Security of Facilities

6.12. ENERGY CONSERVATION

6.12.1. General

6.12.1 Energy Conservation Strategies

The following paragraphs identify potential energy conservation strategies and techniques to consider. The listing is not all inclusive, and the techniques suggested may not be cost-effective for the project.

6.12.1.1 Ground source heating and cooling systems. (Consideration required for site land use, soil and ground water conditions, and ground heat rejection data.)

6.12.1.2 HVAC system refrigerant condenser heat recovery. (Possible recovery for building domestic water heating system or building heating water systems.)

6.12.1.3 HVAC system air-to-air heat recovery. (Recovery of building exhaust system energy for pre-heating and pre-cooling of HVAC system outdoor air.)

6.12.1.4 Glazing and shading of building windows.

6.12.1.5 Additional building features to enhance shading.

6.12.2. Inclusion of Renewable Energy Features. The following renewable energy features have been determined lifecycle cost effective, are included in the project budget and shall be provided:

Preliminary analyses of renewable energy strategies for the Ft McCoy DOIM facility did not identify any cost-effective measures. Contractor may propose renewable energy strategies if they can be demonstrated to be lifecycle cost effective based on the design life of the facility.

6.13. FIRE PROTECTION

6.13.1 Fire Suppression System Site Requirements

Provide a new fire service main, routed from the existing gridded 8-inch water main to the new Fire Riser room. Provide a post indicator valve (PIV) on the new fire service main with padlock, keyed to match facility standards. Provide a tamper switch on the PIV and connect to the building fire alarm system. Install a double check backflow preventer inside the new fire riser room where the fire service enters the new building.

Construct a free-standing fire department connection (FDC) with 5.5-inch Storz connection along the loading dock access road at least 40 feet from the building and within 6 feet of the hard surfaced access road. Locate the FDC immediately next to a fire hydrant and the PIV within 6 feet of the FDC and fire hydrant. Protect all from vehicular impacts by constructing steel bollards.

6.13.2 Fire Suppression Systems

Protect the DOIM building with a fully automatic wet pipe sprinkler system designed in accordance with UFC 3-600-01 and NFPA 13 requirements. The system shall be hydraulically designed. The sprinkler system inspector's test drains shall discharge at the exterior wall to grade. No fire suppression system shall be provided under raised flooring system or within concealed non-combustible attic spaces. All materials in concealed spaces and attic spaces shall be noncombustible. All cabling shall be plenum rated or be in conduit.

The classification of the DOIM shall be predominantly Light Hazard with boiler room, mechanical room, electrical room, janitor's rooms, storage spaces, etc. classified as Ordinary Hazard 1 and 2 as required. The sprinkler design area for Light Hazard shall be 3,000 square feet. The sprinkler design area for the storage and staging area shall be 3,900 square feet and shall be based on class I thru class IV commodities stored up to 12 feet high. Hose

allowance shall be 250 gpm for Light Hazard and 500 gpm for Ordinary Hazard. Water velocity in the sprinkler piping cannot exceed 20 feet per second and a 10% pressure safety factor is required. The spare head sprinkler cabinet, Hydraulic Design Data Chart, and General Information Chart shall be installed next to the fire riser(s).

The NIPRNET Data, SIPRNET Data, and UPS rooms shall be protected throughout by a fully automatic pre-action sprinkler system designed in accordance with UFC 3-600-01, NFPA 75, and NFPA 13 requirements. The system shall be hydraulically designed. The sprinkler system inspector's test drains shall discharge at the exterior wall to grade. The classification of the NIPRNET Data, SIPRNET Data, and UPS rooms shall be Ordinary Hazard, Group 2. The sprinkler design area shall be 3,900 square feet per UFC 3-600-01 requirements for a dry type sprinkler system. Hose allowance shall be 500 gpm. Water velocity in the pre-action sprinkler piping cannot exceed 20 feet per second and a 10% pressure safety factor shall be required. Cross-zoned multi-criteria smoke detectors shall be installed throughout these rooms to activate the pre-action sprinkler system.

Sprinkler heads throughout the DOIM shall be quick response type, except in areas classified as Extra Hazard. Sprinklers in rooms with finished ceilings shall be the recessed type with chrome finished sprinkler head and escutcheon. Sprinkler heads in ceilings with grid-supported tile shall be centered in the ceiling tiles. Sprinkler heads in rooms without finished ceilings shall be upright sprinkler heads.

A recessed lock box (Knox Box) without tamper switch shall be installed at the main entrance to the DOIM building. The lock box shall be Government furnished contractor installed and requirements shall be coordinated with the Post Fire Department.

6.13.3 Fire Department Access

Fire department access is provided on two sides of the new building per UFC 3-600-01 requirements. The fire department connection for the DOIM shall be free-standing type with 5.5-inch Storz connection located at the hard surface area for fire apparatus, and within 10 feet of a fire hydrant at the loading dock access drive, and at least 40-feet from the building. Fire Department access to within 33 feet of one point of the building as required by UFC 3-600-01 shall be provided at the loading dock drive.

6.13.4 Fire Extinguishers

Fire extinguishers shall be provided throughout the DOIM building per NFPA 10 requirements. Fire extinguishers shall be located in recessed cabinets located near exterior egress from the facility, with additional locations as required by the 75 foot travel distance requirements in NFPA 10. Fire extinguishers shall be a minimum of 10 pound dry chemical 4A:60B:C type and shall be OMAR funded.

6.13.5 Fire Alarm and Mass Notification Systems

A combined Fire Alarm and Mass Notification System shall be provided. These include Fire Alarm/Mass Notification Control Panel, Fire Alarm Remote Local Operating Console (LOC), Autonomous Unit, Annunciator, alarm initiating devices, alarm notification appliances, signaling devices, wiring, and testing. Preferred fire alarm system is Silent Knight as the Post has fire alarm technicians trained to maintain this manufacturer's system.

The fire alarm system shall be UL listed, addressable, zoned, non-coded with full control, supervisory, alarm signal, display, and 72-hour battery back-up per NFPA 72.

A solid-state, electronic fire alarm system shall be installed consisting of double action manual pull stations at mechanical and electrical room, and at all building exits at grade; combination speaker and strobes throughout each building, clear for alarm and amber for MNS; duct smoke detectors in the required air-handling units in both supply and return ducts; and magnetic hold-open devices with smoke detectors for corridor fire doors as required.

All fire alarm wiring shall be in a minimum of 3/4-inch conduit. All signal line circuit and initiating device circuit conductors shall be a minimum of #18 AWG solid copper. All audible notification appliance circuit (NAC) conductors shall be a minimum of #16 AWG solid copper. All visual NAC conductors shall be a minimum of #14 AWG solid copper. Conductor gauge shall be increased according to voltage drop calculations that shall be submitted by the Contractor for approval prior to installation.

The fire alarm control panel and MNS control panel shall be installed in the fire sprinkler riser room. A remote annunciator panel shall be installed at the main entrance in the lobby.

The fire alarm system audible notification shall be muted upon activation of a mass notification system announcement.

Remote reporting of the fire alarm system shall be provided with a radio transmitter by Signal Communication (Boston) and antennae that shall transmit the fire alarm signals to the Post Police Department.

A weather-proof horn or bell with a strobe light shall be located on the exterior of the building at the fire protection fire sprinkler riser per NFPA 13.

6.13.6 Code Submittal Form

The Louisville District FIRE PROTECTION/LIFE SAFETY/ACCESSIBILITY CODE SUBMITTAL form can be found at the following link:

HYPERLINK

"<http://www.lrl.usace.army.mil/ed2/default.asp?mycategory=212>"<http://www.lrl.usace.army.mil/ed2/default.asp?mycategory=212>

6.13.7 Additional Criteria

6.13.7.1 NFPA 291 Recommended Practice for Flow Testing and Marking of Hydrants

6.14. SUSTAINABLE DESIGN

6.14.1. LEED Rating Tool Version. This project shall be executed using LEED-NC Version 3.

6.14.2. The minimum requirement for this project is to achieve LEED Silver level. Each non-exempt facility (building plus sitework) must achieve this level. In addition to any facilities indicated as exempt in paragraph 3, the following facilities are exempt from the minimum LEED achievement requirement: None..

6.14.3. Credit Validation: LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the Contractor. Administration/team management of the online project will be by the Contractor. Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is required. The Contractor will obtain LEED certification prior to project closeout. Application, payment of certification of fees and all coordination with USGBC during the certification process will be by the Contractor. GBCI interim review of design phase data is not required by the Government but is recommended. Government validation during project execution does not relieve or modify in any way the Contractor's responsibility to satisfy all requirements for certification as defined by LEED and GBCI. Contractor is not responsible for design phase LEED documentation of any unaltered portion of the design that is accomplished by others. If the project includes unaltered complete design by others, during the certification process Contractor will coordinate all GBCI comments on LEED credits that fall outside Contractor's scope of responsibility with the Government for coordination with the Designer of Record, and Contractor will not be penalized if project fails to achieve certification at the minimum required level due to loss of credits that are the responsibility of others.

6.14.4. Commissioning: See Appendix M for Owner's Project Requirements document(s).

6.14.5. LEED Credits Coordination. The following information is provided relative to Sustainable Sites and other credits.

SS Credit 1 Site Selection:

Project site IS NOT considered prime farmland.

Project site is five feet or more above 100-year flood elevation.

Project site contains no habitat for threatened or endangered species.

No portion of project site lies within 100 feet of any water, wetlands or areas of special concern.

Project site WAS NOT previously used as public parkland.

SS Credit 2 Development Density & Community Connectivity.

Project site DOES NOT meets the criteria for this credit.

SS Credit 3 Brownfield Redevelopment.

Project site DOES NOT meets the criteria for this credit.

SS Credit 4.1 Public Transportation Access.

Project site DOES NOT meets the criteria for this credit.

EA Credit 6 Green Power.

35% of the project's electricity WILL will be provided through an Installation renewable energy contract. Do not purchase Renewable Energy Credits (REC's) to earn this credit.

MR Credit 2 Construction Waste Management.

The Installation does not have an on-post recycling facility available for Contractor's use.

Regional Priority Credits (Version 3 only)

The project zip code is 54656.

6.14.6. LEED Credit Preferences, Guidance and Resources. See Appendix L LEED Project Credit Guidance for supplemental information relating to individual credits.

6.14.7. Not Used

6.14.8. Additional Information

Leadership in Energy and Environmental Design, LEED Approach and Implementation

Sustainability

The inclusion of sustainable materials in the Ft McCoy Information Systems Facility project reflects the Governments philosophy regarding energy efficient design. This facility must achieve LEED Silver Certification and registration with USGBC under LEED NC v3 is required. LEED Silver Certification will be considered for project close-out as part of the as-built deliverables.

Consideration should be given to how credits are interconnected and their synergies and trade-offs. It is important to provide consistent documentation across credits. Exemplary performance and Regional Priority credits can be achieved for several credits as identified in LEED NC v3.

In order to achieve Silver Certification 50 – 59 points are required.

See Appendices for USGBC LEED v3 Check List.

Credit Summary identified for the Ft McCoy DOIM below is provided as a concept only for achieving LEED Credits. It is the responsibility of the D/B to follow through with design, construction and validation for LEED Certification. *Credits are identified as optional credits for D/B consideration for design and construction. Credits not listed are considered not achievable for this project; however it is the D/B's option to pursue all credits in the LEED v3 check list. Some credits may require Government approval unless D/B demonstrates full responsibility for pursuing and following through with credit validation. Post occupancy credits are examples of credits that may require Government approval.

Sustainable Sites (SS)

Site development to make the site a sustainable site and obtain LEED credits are:

-SSp1: Included construction Activity Erosion and Sediment Control Plan for all construction activities to reduce pollution per State of Wisconsin and Local Erosion Control District requirements

-SSp2: Identify Environmental contamination and provide remediation plan.

-SSc1: Contractors may opt to coordinate with FEMA to determine if site will meet 5 feet above flood plain. See Drawing C-1.3.

-SSc4.3: Preferred parking for low emitting and fuel efficient vehicles for 5% of total parking

-SSc4.4: Parking capacity no more the min zoning requirement and preferred parking for car pools and van pools at 5% of total parking

-SSc5.1: Restore disturbed areas with native/adaptive plants that require no irrigation system. Establish site renovation and landscaping to utilize plantings that require no supplemental irrigation and that are native type materials that will allow site stabilization and perennial and self-sustaining replanting. Synergy with WEc1. Contractor may opt to design final grading such that area disturbed is limited as outlined in credit requirements.

-SSc5.2: Maximize the ratio of open space to developed space

-SSc6.1 & c6.2: Implement permanent BMPs for storm water management plan to limit the quantity of flow and quality in terms of contained and removed pollutants in the runoff and meet local requirements in accordance with rules promulgated by Wisconsin DEQ

-*SSc7.1 option for concrete hard surfaces may promote achieving this credit.

-SSc7.2: Providing roofing materials that meet the SRI requirement for the slope for most of the roof area.

-SSc8: Minimize light pollution from site lighting by using outdoor light fixtures that are Nighttime Friendly.

Water Efficiency (WE)

-WEp1: Water Reduction through increase water efficiency within building to reduce water supply and wastewater discharge. Requires documentation and calculations to support WE credits.

-WEc1: Establish site landscaping to utilize plantings that require no supplemental irrigation and that are native type materials that will allow site stabilization and perennial and self-sustaining replanting.

-WEc3: Maximize water efficiency

Energy & Atmosphere (EA)

-EAp1: Commissioning requirements shall be incorporated into the design documents

-EAp2: Establish minimum level of energy efficiency

-EAp3: CFC refrigerants shall not been utilized in the design.

- EAc1: Building envelope and systems shall be designed to optimize energy performance. Preliminary estimated calculations indicate that the minimum energy performance standard is 26% energy reduction.
- *EAc2: For this facility on-site renewable energy offset of energy cost is challenging; however the D/B is encouraged to explore cost effective renewable energy that indicates a return on investment within a maximum of 25 years.
- *EAc3: Enhanced Commission is an optional credit for the D/B's consideration. To achieve this credit the commissioning process needs to begin early in the design process.
- EAc6: Green Power is offered by the serving utility, Consumer's Energy, as a way to encourage the use of grid-source renewable energy. This credit is also identified for an innovation and design credit.

Materials and Resources (MR)

- MRp1: Provide Storage and collection of recyclables. (See Drawing A1.6 for LEED® concept plan)
- MRc2: Implantation plan should include clear instructions for construction waste management. Generally if 50% is achievable with tight controls throughout the construction duration 75% is achievable as well.
- MRc4: Recycled content of materials; good documentation of recycled content can increase the number of points achievable. This credit is also eligible for a regional credit.
- MRc5: Regional materials credits are achievable with good documentation. This credit is also identified for an innovation and design credit.
- MRc7: Use certified wood in accordance with Forest Stewardship Council's (FSC) for at least 50% of the wood used to construct this facility will achieve this credit. Follow submittal documentation requirements; furniture may be eligible as long as 50% of all furniture in facility is FSC.

Indoor Environmental Quality (IEQ)

Design for optimum IAQ and thermal comfort performance.

- IEQp1: Establish Minimum indoor air quality (IAQ). Establish ventilation rates through approved calculation procedures, and monitoring systems that will ensure adequate ventilation during operation. (See Drawing A1.6 for LEED concept plan)
- IEQp2: Minimize exposure of building occupant, indoor surfaces and ventilation air distribution systems to environmental tobacco smoke.
- IEQc1: Provide ventilation system monitoring that provides feedback.
- IEQc2: Provide additional outdoor air ventilation by 30% above the minimum.
- IEQc3.1: Develop an IAQ Management Plan during construction phase that will help prevent contamination of the functional spaces and air distribution systems, and provides for a building flushout period prior to occupancy.
- IEQc3.2: Develop IAQ management plan before occupancy. See Credit IEQc3.1
- IEQc4.1: Reduce the quantity of indoor air contaminants for adhesives and sealants used on the interior for the building.
- IEQc4.2: Reduce the quantity of indoor air contaminants for paints and coatings used on the interior for the building.
- IEQc4.3: Reduce the quantity of indoor air contaminants for all carpets and carpet cushions installed in the interior of the building.

-IEQc4.4: Reduce the quantity of indoor air contaminants using composite wood and agrifiber products that do not contain urea-formaldehyde resin.

-IEQc5: Minimize exposure of occupant to hazardous particulates and chemical pollutants; provide walk-off mats at least 10' long in the path of travel at the primary entries of the facility. This facility concept design includes 2 emergency alarmed exits; however if determined during design the occupants intend to use for secondary entries walk-off mats will be required. Exhaust spaces that store hazardous gasses or chemicals to create negative pressure. Provide air filtration media of MERV 13 or better. (See Drawing A1.6 for LEED concept plan)

-IEQc6.1: Individual lighting controls shall be installed for 90% or more of the building occupants to enable adjustments to suit individual task needs and preferences. Lighting controllability for shared multi-occupant spaces shall be provided to meet the needs of the group. Controls include manual switches and automatic occupancy sensors. (See Drawing A1.6 for LEED concept plan)

-IEQc7.1: Provide comfortable thermal environment.

-IEQc8.1 & 8.2: Connect occupants between indoor and outdoor spaces through daylight and views. (See Drawing A1.6 for LEED concept plan)

Innovation in Design (ID)

-IDc1: WEC3 for 45% reduction in Water Use will achieve this credit.

-IDc2: EAc6 purchase 100% renewable green energy will achieve this credit.

-IDc3: Mrc4 30% recycled content will achieve this credit.

Regional Priority (RP)

Regional priority credits are identified in LEED v3 by postal area code: Ft McCoy postal area code used is 54656. Six credits are identified; however the following 3 are identified as achievable. This does not limit the D/B pursuing additional RP credits.

-RPc1: Achieve WEC1 opt 2

-RPc2: Achieve WEC3, 30% water use reduction.

-RPc3: Achieve MRc2, 75% waste reduction.

LEED v3 Standards

An extensive amount of LEED standards are used to achieve and validate USGBC certification; the following list is to emphasize the necessity to pay close attention and management of the LEED process starting early in design and following through construction.

-2003 EPA Construction General Permit – U.S. Environmental Protection Agency (EPA) Office of Water

-American National Standards Institute (ANSI)/ASHRAE Standard 62.1-2007: ventilation For Acceptable Indoor Air – American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

-American National Standards Institute (ANSI)/ASHRAE Standard 52.2-1999: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size – ASHRAE

-American National Standards Institute (ANSI)/ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy

-American National Standards Institute (ANSI)/ASHRAE Standard 62.1-2007: ventilation for Acceptable Indoor Air Quality – American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

- American National Standards Institute (ANSI)/ASHRAE Standard 62.1-2007: Ventilation for Acceptable Indoor Air Quality – ASHRAE
- American National Standards Institute (ANSI)/ASHRAE Standard S12.60-2002, Acoustical Performance Criteria, Design Requirements, and Guidelines for School
- American National Standards Institute (ANSI)/ASTME-779.03, Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
- American National Standards Institute ANSI/ASHRAE Standard 55-2004: Thermal Environmental Conditions for Human Occupancy
- ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Building Except Low-Rise Residential Lighting, Section 9 (without amendments) – American Society of Heating Refrigeration, and Air-Conditioning Engineers
- ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings except Low-Rise Residential, and Informative Appendix G, Performance Rating Model – American National Standards Institute, American Society of Heating, Refrigerating and Air-Conditioning Engineers, and Illuminating Engineering Society of North America
- ANSI/ASHRAE/IESNA Standard 90.1-2007: Energy Standard for Buildings Except Low-Rise Residential – American National Standards Institute, American Society of Heating, Refrigerating and Air-Conditioning Engineers, and Illuminating Engineering Society of North America
- ANSIASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential – American Society of Heating, Refrigerating and Air-Conditioning Engineers
- ASHRAE Advanced Energy Design Guide for K-12 School Buildings
- ASHRAE Advanced Energy Design Guide for Small Office Building 2004
- ASHRAE Advanced Energy Design Guide for Small Office Buildings, 2006
- ASHRAE Advanced Energy Design Guide for Small Warehouses and Self Storage Buildings 2008
- ASHRAE Handbook, Chapter 47, Sound and Vibration Control, 2003 HVAC Applications
- ASTM C1371-04, Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers
- ASTM C1549-04, Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer
- ASTM D1003-07e1, Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics
- ASTM E1527-05, Phase I Environmental Site Assessment – ASTM International
- ASTM E1903-97, Phase II Environmental Site Assessment, effective 2002, ASTM International
- ASTM E1918-97, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low – Sloped Surfaces in the Field
- ASTM E408-71 (1996) e1, Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
- ASTM E903-96, Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres
- ASTM Standards

- California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small- Scale Environmental Chambers, including 2004 Agenda – California Department of Health Sciences
- Carpet and Rug Institute (CRI) Green Label Plus Testing Program – Carpet and Rug Institute
- Center for Resource Solutions, Green-e Product Certification Requirements
- Chartered Institute of Building Services Engineers (CIBSE) Application Manual 10-2005, Natural Ventilation in Non-Domestic Buildings – CIBSE, London
- Endangered Species List – U.S. Fish and Wildlife Service, List of Threatened and Endangered Species
- Energy Star Program, Target Finder Rating Tool
- Federal Emergency Management Agency, Definition of 100-Year flood – Federal Emergency Management Agency
- FloorScore Program – Resilient Floor Covering Institute
- Forest Stewardship Council Principles and Criteria
- Green Seal Standard 36 (GS-36), effective October 19, 2000
- Green Seal Standard GC-03
- Green Seal Standard GS-11
- Institute of Transportation Engineers, Parking Generation study, 2003
- International Association of Plumbing and Mechanical Officials, Publication IAPMO/American National Standards Institute UPC 1-2006, Uniform Plumbing Code 2006, Section 402.0, Water-Conserving Fixtures and Fittings
- International Code Council, International Plumbing Code 2006, Section 605, Design of Building Water Distribution System
- International Organization for Standardization (ISO)
- International Performance Measurement and Verification Protocol, Volume III, EVO 30000.1-2006, Concepts and Options for Determining Energy Savings in New Construction, effective January, 2006
- LEED Accredited Professional – Green Building Certification Institute – HYPERLINK "www.gbci.org"www.gbci.org
- National Marine Fisheries Service, List of Endangered Marine Species
- New Buildings Institute, Advanced Buildings Core Performance Guide
- Residential Manual for Compliance with California's 2001 Energy Efficiency Standards (For Low Rise Residential Buildings), Chapter 4
- Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, Chapter 3, November 2007
- South Coast Air Quality Management District (SCAQMD) Amendment to South Coast Rule 1168, VOC Limits, effective January 7, 2005 – South Coast Air Quality Management District
- South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings
- South Coast air Quality Management District (SCAQMD) Rule 1168, VOC Limits

- State of California Standard 1350, Section 9, Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, Testing Criteria
- The Energy Policy Act (EPA) of 1992 (and as amended) – This U.S. act addresses energy and water use in commercial, institutional, and residential facilities.
- The Energy Policy Act (EPA) of 2005 – This statute became U.S. law in August 2005.
- U.S. Department of Agriculture, United States Code of Federal Regulations Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5), Definition of Prime Agricultural Land
- U.S. Environmental Protection Agency Compendium of Methods for the Determination of Air Pollutants in Indoor Air
- U.S. EPA Clean Air Act, Title VI, Section 608, Compliance with the Section 608 Refrigerant Recycling Rule
- U.S. EPA, Definition of Brownfields – EPA Sustainable Redevelopment of Brownfields Program
- United States Code of Federal Regulations, 40 CFR, Parts 230-233, and Part 22, Definition of Wetlands

6.15. ENVIRONMENTAL

In addition to the standard requirements outlined in Section 01 57 20.00 10 Environmental Protection, provide the following site specific environmental requirements.

6.15.1 Sound Intrusions

In addition to the requirements outlined in Section 01 57 20.00 10 Paragraph 3.3.3, comply with the provisions of the State of Wisconsin rules and develop a noise management plan if deemed necessary by any authoritative agency.

6.15.2 Chemical Materials Management and Waste Disposal

In addition to the requirements outlined in Section 01 57 20.00 10 Paragraph 3.4, disposal of wastes will be in accordance with the installation hazardous waste management plan (HWMP) unless otherwise specified in other sections and/or shown on the drawings.

6.15.2.1 Solid Wastes

Excavated soils are to be reused on-site to the greatest extent practicable and economically justified. If reuse is not practical or economical and disposal on the Government installation is not available, any soil removed from the construction site shall be taken to a licensed landfill or, alternatively, the Contractor may place excess material on a receiving property that has been approved by the Government. Any proposed receiving property shall have an environmental site assessment (ESA) that was performed no earlier than two months prior to award of the contract and in accordance with ASTM 1527-05 by a qualified professional registered environmental engineering firm. The findings of the ESA shall state that no indications of contamination were found on or adjacent to the property and that no additional investigation is warranted. A copy of the ESA report shall be furnished by the Contractor to the Government. Written Government approval of the receiving property is required prior to removal of any soil from the construction work site for disposal at the site. A written certification signed by the contractor shall be furnished to the Government indicating the soil was placed on the approved receiving site prior to payment for this effort. The certification shall identify dates and quantities of soils placed.

Per the requirements of the Assistant Chief of Staff for Installation Management (ACSIM), place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Handling, storage, and disposal must be conducted to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill will be the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and

disposal facilities have the necessary permits and licenses to operate. Comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

6.15.2.2 Chemicals and Chemical Wastes

Per the HWMP, dispense chemicals ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. This documentation will be periodically reviewed by the Government. Collect chemical waste in corrosion resistant, compatible containers. Collection drums must be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes will be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

6.15.3 Historical, Archaeological, and Cultural Resources

In addition to the requirements outlined in Section 01 57 20.00 10 Paragraph 3.6, If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources will be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources or as otherwise dictated by the installation's Integrated Cultural Resources Management Plan (ICRMP).

6.15.4 Noxious Weeds and Invasive Species Management

In addition to the requirements outlined in Section 01 57 20.00 10 Paragraph 3.8, prepare and implement an Invasive Species Management Plan (ISMP) consistent with the Fort McCoy Wildlife Program Invasive Weed Management Plan, and federal and state initiatives. Use the most effective and environmentally sound approach for controlling invasive species, to include the use (or reduction in use) of herbicides. The ISMP must be approved by the Invasive Species Coordinator prior to implementing the plan.

6.16. PERMITS

The Contractor shall obtain the required approvals, permits and pay associated fees necessarily to accomplish work described, including work to be accomplished off site.

6.16.1 Wisconsin Department of Natural Resources (WDNR)

Comply with the requirements of the State of Wisconsin Department of Natural Resources (WDNR) General Permit to Discharge under the Wisconsin Pollution Discharge Elimination System (WPDES), as outlined in sections 6.3.3.1 Stormwater Management (SWM) Systems, 6.3.3.2 Erosion and Sediment Control, and in Appendix AA Application for Project Permits.

6.16.2 Excavation

The Contractor shall obtain and pay fees required for any grading, excavation or earthwork permit as required by Ft McCoy.

6.17. DEMOLITION

Not used.

6.18. ADDITIONAL FACILITIES

Not used.

End of Section 01 10 00

**SECTION 01 32 01.00 10
PROJECT SCHEDULE**

1.0 GENERAL

1.1. REFERENCES

1.2. QUALIFICATION

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. BASIS FOR PAYMENT AND COST LOADING

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

3.4. PROJECT SCHEDULE SUBMISSIONS

3.5. SUBMISSION REQUIREMENTS

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

3.7. REQUESTS FOR TIME EXTENSIONS

3.8. DIRECTED CHANGES

3.9. WEEKLY PROGRESS MEETINGS

3.10. OWNERSHIP OF FLOAT

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

- U.S. ARMY CORPS OF ENGINEERS (USACE) ER 1-1-11 (1995) Progress, Schedules, and Network Analysis Systems <http://www.usace.army.mil/publications/eng-regs/er1-1-11/entire.pdf>
- Army Corps of Engineers ECB No. 2005-10, (31 August 2005) Scheduling Requirements for Testing of Mechanical Systems in Construction http://www.wbdg.org/ccb/ARMYCOE/COEECB/ecb_2005_10.pdf

1.2. QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of the schedule and all required updating (statusing) and preparation of reports. The authorized representative shall be experienced in scheduling projects similar in nature to this project and shall be experienced in the use of the scheduling software that meets the requirements of this specification.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.1.1. Submit a project schedule as specified herein for approval showing the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project, including the design and construction sequences is required. Contractor management personnel shall actively participate in its development. Designers, subcontractors and suppliers working on the project shall also contribute in developing an accurate project schedule. The schedule must be a forward planning as well as a project monitoring tool. The approved project schedule shall be used to measure the progress of the work and to aid in evaluating requests for excusable time extensions. The schedule shall be cost loaded and activity coded as specified herein. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule

3.1.2. Status the schedule on at least a monthly basis, as specified herein. If in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained. See paragraph 3.7.4.

3.1.3. Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of the contract.

3.2. BASIS FOR PAYMENT AND COST LOADING

The schedule shall be the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified scheduling personnel will result in an inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all information, as specified herein will result in the disapproval of the preliminary, initial and subsequent schedule updates. In the event schedule revisions are directed by the Contracting Officer and those revisions have not been included in subsequent revisions or updates, the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until such revisions to the

project schedule have been made. Activity cost loading shall be reasonable as determined by the Contracting Officer. The aggregate value of all activities coded to a contract CLIN as specified herein shall equal the value of the CLIN on the Schedule.

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

The computer software system utilized to produce and update the project schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this specification will result in the disapproval of the schedule. Scheduling software that meets the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER-1-1-11(1995) referenced herein are Primavera Project Planner (P3) by Primavera, and Open Plan by Deltek.

3.3.1. Use of the Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the project schedule. Prepare the project schedule using the Precedence Diagram Method (PDM).

3.3.2. Level of Detail Required

Develop the project schedule to an appropriate level of detail. Failure to develop the project schedule to an appropriate level of detail, as determined by the Contracting Officer, will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2.1. Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days. Procurement activities are defined herein.

3.3.2.2. Design and Permit Activities

Design and permit activities, including necessary conferences and follow-up actions and design package submission activities shall be included. The Contractor shall include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This shall be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. The schedule shall include review and correction periods associated with each item.

3.3.2.3. Procurement Activities

The schedule must include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days. A typical procurement sequence includes the string of activities: submit, approve, procure, fabricate, and deliver.

3.3.2.4. Mandatory Tasks

The following tasks must be included and properly scheduled:

- 3.3.2.4.1. Submission, review and acceptance of design packages
- 3.3.2.4.2. Submission of mechanical/electrical/information systems layout drawings
- 3.3.2.4.3. Submission and approval of O & M manuals
- 3.3.2.4.4. Submission and approval of as-built drawings
- 3.3.2.4.5. Submission and approval of 1354 data and installed equipment lists

- 3.3.2.4.6. Submission and approval of testing and air balance (TAB)
- 3.3.2.4.7. Submission of TAB specialist design review report
- 3.3.2.4.8. Submission and approval of fire protection specialist
- 3.3.2.4.9. Submission and approval of testing and balancing of HVAC plus commissioning plans and data. Develop the schedule logic associated with testing and commissioning of mechanical systems to a level of detail consistent with Engineering and Construction Bulletin (ECB) No. 2005-10 dated 31 August 2005.
- 3.3.2.4.10. Air and water balancing
- 3.3.2.4.11. HVAC commissioning
- 3.3.2.4.12. Controls testing plan submission
- 3.3.2.4.13. Controls testing
- 3.3.2.4.14. Performance Verification testing
- 3.3.2.4.15. Other systems testing, if required
- 3.3.2.4.16. Contractor's pre-final inspection
- 3.3.2.4.17. Correction of punch list from Contractor's pre-final inspection
- 3.3.2.4.18. Government's pre-final inspection
- 3.3.2.4.19. Correction of punch list from Government's pre-final inspection
- 3.3.2.4.20. Final Inspection

3.3.2.5. Activity Responsibility Coding (RESP)

Assign Responsibility Code for all activities to the Prime Contractor, Subcontractor or Government agency responsible for performing the activity. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements. Code all activities not coded with a Government Responsibility Code to the Prime Contractor or Subcontractor responsible to perform the work. Activities shall not have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE). Unacceptable code values are abbreviations of the names of subcontractors.

3.3.2.6. Activity Work Area Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities shall not have more than one Work Area Code. Not all activities are required to be Work Area coded. A lack of Work Area coding will indicate the activity is not resource or space constrained.

3.3.2.7. Contract Changes/Requests for Equitable Adjustment (REA) Coding (MODF)

Assign Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer, with a Contract Changes/REA Code. Key all Code values to the Government's modification numbering system.

Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Contracting Officer. Assign Activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless approved. An activity shall not have more than one Contract Changes/REA Code

3.3.2.8. Contract Line Item (CLIN) Coding (BIDI)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. An activity shall not contain more than one CLIN Item Code. CLIN Item code all activities, even when an activity is not cost loaded.

3.3.2.9. Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities, based upon the phase of work in which the activity occurs. Code activities to either a Design Phase or a Construction Phase. Code fast track design and construction phases proposed by the Contractor to allow filtering and organizing the schedule by fast track design and construction packages. If the contract specifies construction phasing with separately defined performance periods, identify a Construction Phase Code to allow filtering and organizing the schedule accordingly. Each activity shall have only one Phase of Work code.

3.3.2.10. Category of Work Coding (CATW)

Assign Category of Work code to all Activities based upon the category of work which the activity belongs. Category of Work Code must include, but is not limited to: Design, Design Submittal, Construction Submittal, Approval, Acceptance, Procurement, Fabrication, Delivery, Weather Sensitive Installation, Non-Weather Sensitive Installation, Start Up, Test, and Turnover. Assign a Category of Work code to each activity. Each activity shall have only one Category of Work Code.

3.3.2.11. Definable Features of Work Coding (FOW1, FOW2, FOW3)

Assign a Definable Feature of Work Code to appropriate activities based on the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 04.00 10, Contractor Quality Control. An activity shall not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

3.3.3. Scheduled Project Completion and Activity Calendars

The schedule interval shall extend from NTP date to the required contract completion date. The contract completion activity (End Project) shall finish based on the required contract duration in the accepted contract proposal, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7 day calendar when the contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1. Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the project schedule an activity called "Start Project" or "NTP". The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, with a zero day duration.

3.3.3.2. Schedule Constraints and Open Ended Logic

Constrain completion of the last activity in the schedule by the contract completion date. Schedule calculations shall result in negative float when the calculated early finish date of the last activity is later than the contract completion date. Include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the contract completion date for the project, and with a zero day duration or by using the "project must finish by" date in the scheduling software. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as "zero free float" or "zero total float" are typically prohibited. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

3.3.3.3. Early Project Completion

In the event the Preliminary or Initial project schedule calculates an early completion date of the last activity prior to the contract completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4. Interim Completion Dates

Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.

3.3.4.1. Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2. End Phase

Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the specified completion date for that phase and a zero day duration.

3.3.4.3. Phase "X" Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5. Default Progress Data Disallowed

Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.

3.3.6. Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule. Correct out of sequence progress that continues for more than two update cycles by logic revision, as approved by the Contracting Officer.

3.3.7. Negative Lags and Start to Finish Relationships

Lag durations contained in the project schedule shall not have a negative value. Do not use Start to Finish relationships (SF).

3.3.8. Calculation Mode

Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ("progress override") will not be allowed.

3.3.9. Milestones

The schedule must include milestone activities for each significant project event including but not limited to: milestone activities for each fast track design package released for construction; design complete; foundation/substructure construction complete; superstructure construction complete; building dry-in or enclosure complete to allow the initiation of finish activities; permanent power complete; and building systems commissioning complete.

3.4. PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data CD, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1. Preliminary Project Schedule Submission

Submit the Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days for approval within 15 calendar days after the NTP is acknowledged. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. Detail it for the first 90 calendar days. It may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as previously specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required Plan and Program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, the planned submissions of all early design packages, permitting activities, design review conference activities and other non-construction activities intended to occur within the first 90 calendar days. Schedule any construction activities planned for the first 90 calendar days after NTP. Constrain planned construction activities by Government acceptance of the associated design package(s) and all other specified Program and Plan approvals. Activity code any activities that are summary in nature after the first 90 calendar days with Responsibility Code (RESP) and Feature of Work code (FOW1, FOW2, FOW3)

3.4.2. Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after NTP. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. The Initial Schedule shall be at a reasonable level of detail as determined by the Contracting Officer. The schedule shall include detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead procurement activities required prior to design completion. The Initial Project Schedule shall include the entire construction sequence and all fast track construction activities, with as much detail as is known at the time but, as a minimum, shall include all construction start and completion milestone activities, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design packages are developed, fully detail the remaining construction activities concurrent with the monthly schedule updating process. Constrain construction activities by Government acceptance of associated designs. When the design is complete, incorporate into the then approved schedule update all remaining detailed construction activities that are planned to occur after the dry-in milestone.

3.4.3. Design Package Schedule Submission:

With each design package submitted to the Government, submit a frag-net schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

3.4.4. Periodic Schedule Updates

Based on the result of the meeting specified in PERIODIC SCHEDULE UPDATE MEETINGS, submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made. Update the schedule to include detailed procurement and construction activities as the design progresses, but not later than the submission of the final, un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission, if such activity is authorized.

3.4.5. Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the QCS website: www.rmssupport.com. The SDEF format is as follows:

Field	Activity Code	Length	Description
1	WRKP	3	Workers per Day
2	RESP	4	Responsible Party (e.g. GC, subcontractor, USACE)
3	AREA	4	Area of Work
4	MODF	6	Modification or REA number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of Work
7	CATW	1	Category of Work
8	FOW1	10	Feature of Work (used up to 10 characters in length)
9	FOW2	10	Feature of Work (used up to 20 characters in length)
10	FOW3	10	Feature of Work (used up to 30 characters in length)

3.5. SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

3.5.1. Data CD's

Provide two sets of data CD's containing the project schedule in the backup format. Each CD shall also contain all previous update backup files. File medium shall be CD. Label each CD, indicating the type of schedule (Preliminary, Initial, Update), full contract number, Data Date and file names. Each schedule shall have a unique file name as determined by the Contractor.

3.5.2. Narrative Report

Provide a Narrative Report with the Preliminary, Initial, and each Periodic Update of the project schedule, as the basis of the progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through its analysis. Identify and explain why any activities that, based their calculated late dates, should have either started or finished during the update period but did not.

3.5.3. Approved Changes Verification

Include only those project schedule changes in the schedule submission that have been previously approved by the Contracting Officer. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4. Schedule Reports

The format, filtering, organizing and sorting for each schedule report shall be as directed by the Contracting Officer. Typically reports shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. The following lists typical reports that will be requested. One or all of these reports may be requested for each schedule submission.

3.5.4.1. Activity Report

A list of all activities sorted according to activity number.

3.5.4.2. Logic Report

A list of detailed predecessor and successor activities for every activity in ascending order sorted by activity number.

3.5.4.3. Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.4.4. Earnings Report by CLIN

A compilation of the Contractor's Total Earnings on the project from the NTP to the data date. This report shall reflect the earnings of specific activities based on the agreements made in the schedule update meeting defined herein. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining progress payments. Group activities by CLIN Item number and sort by activity number. This report shall: sum all activities coded to a particular CLIN and provide a CLIN Item percent earned value; and complete and sum CLIN items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5. Network Diagram

The network diagram is required for the Preliminary, Initial and Periodic Updates. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished.

The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1. Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.5.2. Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3. Critical Path

Clearly show the critical path.

3.5.5.4. Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5. S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

Conduct periodic schedule update meetings for the purposes of reviewing the Contractor's proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Meetings shall occur at least monthly within five days of the proposed schedule data date and after the Contractor has updated the schedule with Government concurrence respecting actual start dates, actual finish dates, remaining durations and percent complete for each activity it intend to status. Match the actual start and finish dates with the dates exported, as described in paragraph 3.3.5. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed schedule update during the meeting. The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity review the updated schedule on a real time and interactive basis. The Contractor's authorized scheduling representative will organize, sort, filter and schedule the update as requested by the Government. The meeting will last no longer than 8 hours. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the Government 48 hours in advance of the meeting. The Contractor's Project Manager and Authorized Scheduler shall attend the meeting with the Authorized Representative of the Contracting Officer.

3.6.1. Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 working days after the periodic schedule update meeting, reflecting only those changes made during the previous update meeting.

3.6.2. Activity Statusing

Statusing information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD) and Percent Complete shall be subject to the approval of the Government prior to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting:

3.6.2.1. Actual Start and Finish Dates

Accurately status the AS and/or AF dates for each activity currently in-progress or completed since the last update. The Government may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.

3.6.2.2. Remaining Duration

Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining durations may exceed the activity OD or may exceed the activity's prior update RD if the Government considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.

3.6.2.3. Percent Complete

Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be statused 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from Government pre-final inspection activity(ies) not less than 1% of the total contract value, which activity(ies) may be statused 100 percent complete upon completion and correction of all punch list work identified during Government pre-final inspection(s).

3.6.2.4. Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The Government will only approve logic revisions for the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

3.6.2.5. Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

3.7. REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.7.1. Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with its request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.2. Submission Requirements

Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

3.7.2.1. A list of affected activities, with their associated project schedule activity number.

3.7.2.2. A brief explanation of the causes of the change

3.7.2.3. An analysis of the overall impact of the changes proposed.

3.7.2.4. A sub-network of the affected area

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.7.3. Additional Submission Requirements

The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide this disk within 4 days of the Contracting Officer's request.

3.7.4. If Progress Falls Behind the Approved Project Schedule

3.7.4.1. Should progress fall behind the approved schedule (more than 20 work days of negative float) due to Contractor generated problems, promptly provide a supplemental recovery or completion schedule that illustrates its efforts to regain time to assure a completion by the required contract completion date.

3.7.4.2. The supplemental recovery or completion schedule will not replace the original, approved schedule as the official contract schedule. Continue to update the original, approved schedule on at least a monthly basis. In addition, the Contractor and the Contracting Officer will monitor the supplemental recovery or completion schedule on at least a bi-weekly basis to determine its effect on regaining the rate of progress to assure project completion by the contractually required completion date.

3.7.4.3. Do not artificially improve progress by simply revising the schedule logic, modifying or adding constraints, or shortening future work activity durations. Resource and manpower load the supplemental recovery schedule or completion schedule with crew size and productivity for each remaining activity, indicating overtime, weekend work, and/or double shifts needed to regain the schedule, in accordance with FAR 52.236.15, without additional cost to the Government. Indicate assumptions made and the basis for any logic, constraint, or duration changes used in the creation of the supplemental recovery or completion schedule in a narrative submitted for the Contracting Officer's approval. Any additional resources or manpower must be evident at the work site. Do not modify the official contract schedule to include these assumptions.

3.7.4.4. Failure to perform work and maintain progress in accordance with the supplemental recovery or completion schedule may result in an interim and final unsatisfactory performance rating and/or may result in corrective action by the Contracting Officer in accordance with FAR 52.236-15.

3.8. DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The Contracting Officer will approve proposed revisions to the schedule prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the

Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9. WEEKLY PROGRESS MEETINGS

3.9.1. The Government and the Contractor shall meet weekly (or as otherwise mutually agreed to) between the meetings described in paragraph PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. The then current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor's Project Manager and the Authorized Representative of the Contracting Officer shall attend. The weekly progress meeting will address the status of RFI's, RFP's and Submittals.

3.9.2. Provide a bar chart produced by the scheduling software, organized by Total Float and Sorted by Early Start Date, and a two week "look-ahead" schedule by filtering all schedule activities to show only current ongoing activities and activities schedule to start during the upcoming two weeks, organized by Work Area Code (AREA) and sorted by Early Start Date.

3.9.3. The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities), are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility coded activities require Government corrective action.

3.10. OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

The Contractor shall download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

End of Section 01 32 01.00 10

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

1.0 GENERAL

- 1.1. DEFINITIONS
- 1.2. NOT USED
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1.0 GENERAL

1.1. DEFINITIONS

1.1.1. Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2. Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction Progress Schedule.
- Submittal register.
- Schedule of prices.
- Accident Prevention Plan.
- Work plan.
- Quality control plan.
- Environmental protection plan.

SD-02 Shop Drawings

- Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.
- Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.
- Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

- Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.
- Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

- Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.
- Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.
- Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

- Calculations, mix designs, analyses or other data pertaining to a part of work.
- Design submittals, design substantiation submittals and extensions of design submittals.

SD-06 Test Reports

- Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must

have been within three years of date of contract award for the project.)

- Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
- Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
- Investigation reports.
- Daily checklists.
- Final acceptance test and operational test procedure.

SD-07 Certificates

- Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
- Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.
- Confined space entry permits.
- Text of posted operating instructions.

SD-08 Manufacturer's Instructions

- Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

- Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- Factory test reports.

SD-10 Operation and Maintenance Data

- Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

SD-11 Closeout Submittals

- Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.1.3. Approving Authority

Office authorized to approve submittal.

1.1.4. Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1. Designer of Record Approved (DA)

1.3.1.1. Designer of Record (DOR) approval is required for all extensions of design, critical materials, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". Provide the Government the number of copies designated hereinafter of all DOR approved submittals, after the DOR has taken appropriate action. The DOR shall ensure that submittals conform to the Solicitation, the Accepted Proposal and the completed design, however see below for those submittals proposing a deviation to the contract or a substitution of a material, system, or piece of equipment that was identified by manufacturer, brand name or model description in the accepted contract proposal.

1.3.1.2. The DOR shall ensure that the submittals comply with all applicable Buy American Act and Trade Agreement Act clauses in the contract. The DOR may confer with the Contracting Officer's Representative for advice and interpretation of those clauses, as necessary.

1.3.1.3. The Government may, but is not required to, review any or all DOR approved submittals for conformance to the solicitation, accepted proposal and the completed design. Except for submittals designated as deviating from the Solicitation, the Accepted Proposal or completed design, the Contractor may proceed with acquisition and installation upon DOR approval. Government Approved (GA)

1.3.2. Government Approved (GA)

Government approval is required for any item specifically designated as requiring Government approval in the Solicitation, for internal and external color finish selections and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.3. Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the solicitation. Section 01 33 16 **DESIGN AFTER AWARD** covers the design submittal and review process in detail. Review will be only for conformance with the applicable codes, standards and contract requirements. Design data includes the design documents described in Section 01 33 16 **DESIGN AFTER AWARD**. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.3.4. Designer of Record Approved/Government Conformance Review (DA/CR)

1.3.4.1. Deviations to the Accepted Design. Designer of Record approval and the Government's concurrence are required for any proposed deviation from the accepted design which still complies with the contract (the Solicitation and Accepted Proposal) before the Contractor is authorized to proceed with material acquisition or installation. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings." If necessary to facilitate the project schedule, the Contractor and the DOR may discuss a submittal proposing a deviation with the Contracting Officer's Representative prior to officially submitting it to the Government. However, the Government reserves the right to review the submittal before providing an opinion, if it deems it necessary. In any case, the Government will not formally agree to or provide a preliminary opinion on any deviation without the DOR's approval or recommended approval. The Government reserves the right to non-concur with any deviation from the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

1.3.4.2. Substitutions. Unless prohibited or provided for otherwise elsewhere in the Contract, where the accepted contract proposal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, and the Contractor desires to substitute manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, identifying information and the DOR's approval, as meeting the contract requirements and that it is equal in function, performance, quality and salient features to that in the accepted contract proposal.

1.3.5. Designer of Record Approved/Government Approved (DA/GA)

Any proposed deviation to the solicitation and/or the accepted proposal constitutes a change to the contract. In addition to the above stated requirements for proposed deviations to the accepted design, both Designer of Record and Government Approval and, where applicable, a contract modification are required before the Contractor is

authorized to proceed with material acquisition or installation for any proposed deviation to the contract. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Government reserves the right to accept or reject any such proposed deviation at its discretion.

1.3.6. Information Only

All submittals not requiring Designer of Record or Government approval will be for information only. Provide the Government "For Information Only" copies of all submittals not requiring Government approval or concurrence, after the Designer of Record has taken the appropriate action.

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

Do not construe the Contracting Officer's approval of or concurrence with submittals as a complete check, but only that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval or concurrence will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for design, dimensions, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work. The Government won't consider re-submittals for the purpose of substituting previously approved materials or equipment unless accompanied by an explanation of why a substitution is necessary.

1.5. DISAPPROVED SUBMITTALS

Make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Resubmit any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, provide prompt notice in accordance with the Contract Clause "Changes" to the Contracting Officer.

1.6. WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.7. GENERAL

Make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, the Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, shall check, approve, sign, and stamp all items, indicating action taken. Clearly identify proposed deviations from the contract requirements. Include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Schedule and make submittals requiring Government approval prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples remaining upon completion of the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8. SUBMITTAL REGISTER (GA)

Develop a complete list of submittals, including each separate design package submittal. Submit the initial submittal register within 15 days after Notice to Proceed, including, as a minimum, the design packages and other initial submittals required elsewhere in the contract. The Designer of Record shall identify required submittals in the

specifications, and use the list to prepare the Submittal Register, utilizing the government-provided software, QCS (see Section 01 45 01.10), to create the ENG Form 4288. Appendix R is a preliminary submittal register input form for use with the Quality Management System and the Resident Office Management System (QCS and RMS). The Government will provide the Contractor the actual Excel Spreadsheet version of this sample input form after award to modify and to use for input into QCS. The Excel Spreadsheet is not totally inputable into QCS, so additional keystroke input will be necessary. The sample input form is not all-inclusive. In addition, additional submittals may be required by other parts of the contract. After award, the parties will meet to discuss contract specific (or task order specific for a task order contract) distribution for the submittals all-inclusive and additional submittals may be required by other parts of the contract. Develop and complete the submittal register as the design is completed. Submit it to the Contracting Officer with the un-reviewed final design package submission or as soon as the design specifications are completed, if before the final design submission. When applicable, if the Contractor elects to fast track design and construction, using multiple design package submissions, update the submittal register to reflect the submittals associated with each design submission, clearly denoting all revisions to the previous submission. The submittal register serves as a scheduling document for submittals and for control of submittal actions throughout the contract period. Coordinate the submit dates and need dates used in the submittal register with dates in the Contractor prepared progress schedule. Submit monthly updates to the submittal register showing the Contractor action codes and actual dates with Government action codes and actual dates or until all submittals have been satisfactorily completed. Revise and submit the submittal register when revising the progress schedule.

1.9. SCHEDULING

Schedule submittals covering component items forming a system or items that are interrelated to be coordinated and submitted concurrently. Schedule certifications to be submitted with the pertinent drawings. Allow adequate time (a minimum of 15 calendar days exclusive of mailing time) and show on the register for those items requiring Government approval or concurrence. No delay damages or time extensions will be allowed for time lost in late submittals by the Contractor.

1.10. TRANSMITTAL FORM (ENG FORM 4025)

Use the transmittal form (ENG Form 4025) for submitting submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor or are included in the QCS software if the Contractor is required to use QCS for this contract. Use a separate transmittal form for each specification section. Complete this form by filling out all the heading blank spaces and identify each item submitted. Exercise special care to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.11. SUBMITTAL PROCEDURES

Make submittals as follows:

1.11.1. Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Post-Award Conference.

1.11.2. Deviations

For submittals which include proposed deviations requested by the Contractor, check the column "variation" of ENG Form 4025. Set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.12. CONTROL OF SUBMITTALS

Carefully control his procurement operations to ensure that each individual submittal is made on or before the scheduled submittal date shown on the approved "Submittal Register."

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

Upon completion of review of submittals requiring Government approval or concurrence, the Government will stamp and date the submittals as approved or concurred.. The Government will retain four (4) copies of the submittal and return four (4) copy(ies) of the submittal.

1.14. INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. The Government will retain eight (8) copies of information only submittals.

1.15. STAMPS

Use stamps similar to the following on the submittal data to certify that the submittal meets contract requirements:

CONTRACTOR

(FIRM NAME)

Approved

Approved with corrections as noted on submittal data and/or attached
sheet(s)

Signature:

Title:

Date:

For design-build construction, both the Contractor Quality Control System Manager and the Designer of Record shall stamp and sign to certify that the submittal meets contract requirements.

**SECTION 01 33 16
DESIGN AFTER AWARD**

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ATTACHMENT B FURNITURE, FIXTURES AND EQUIPMENT REQUIREMENTS

ATTACHMENT C TRACKING COMMENTS IN DRCHECKS

ATTACHMENT D SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

ATTACHMENT E LEED SUBMITTALS

ATTACHMENT F BUILDING INFORMATION MODELING REQUIREMENTS

ATTACHMENT G DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.1.1. The information contained in this section applies to the design required after award. After award, the Contractor will develop the accepted proposal into the completed design, as described herein.

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than ten (10) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

1.1.3. The Contractor may proceed with the construction work included in a separate design package after the Government has reviewed the final (100%) design submission for that package, review comments have been addressed and resolved to the Government's satisfaction and the Contracting Officer (or the Administrative Contracting Officer) has agreed that the design package may be released for construction.

1.1.4. **INTEGRATED DESIGN.** To the maximum extent permitted for this project, use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

1.2. DESIGNER OF RECORD

Identify, for approval, the Designer of Record ("DOR") that will be responsible for each area of design. One DOR may be responsible for more than one area. Listed, Professional Registered, DOR(s) shall account for all areas of design disciplines shall be accounted for by a listed. The DOR's shall stamp, sign, and date each design drawing and other design deliverables under their responsible discipline at each design submittal stage (see contract clause Registration of Designers). If the deliverables are not ready for release for construction, identify them as "preliminary" or "not for release for construction" or by using some other appropriate designation. The DOR(s) shall also be responsible for maintaining the integrity of the design and for compliance with the contract requirements through construction and documentation of the as-built condition by coordination, review and approval of extensions of design, material, equipment and other construction submittals, review and approval or disapproval of requested deviations to the accepted design or to the contract, coordination with the Government of the above activities, and by performing other typical professional designer responsibilities.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVITIES & CONFERENCES

3.1.1. Design Quality Control Plan

Submit for Government acceptance, a Design Quality Control Plan in accordance with Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL before design may proceed.

3.1.2. Post Award Conference

3.1.2.1. The government will conduct a post award contract administration conference at the project site, as soon as possible after contract award. This will be coordinated with issuance of the contract notice to proceed (NTP). The Contractor and major sub-contractor representatives shall participate. All designers need not attend this first meeting. Government representatives will include COE project delivery team members, facility users, facility command representatives, and installation representatives. The Government will provide an agenda, meeting goals, meeting place, and meeting time to participants prior to the meeting.

3.1.2.2. The post award conference shall include determination and introduction of contact persons, their authorities, contract administration requirements, discussion of expected project progress processes, and coordination of subsequent meetings for quality control (see Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL), Partnering (see below and SCR: Partnering), and the initial design conference (see below).

3.1.2.3. The government will introduce COE project delivery team members, facility users, facility command representatives, and installation representatives. The DB Contractor shall introduce major subcontractors, and other needed staff. Expectations and duties of each person shall be defined for all participants. A meeting roster shall be developed and distributed by the government with complete contact information including name, office, project role, phone, mailing and physical address, and email address.

3.1.3. Partnering & Project Progress Processes

3.1.3.1. The initial Partnering conference may be scheduled and conducted at any time with or following the post award conference. The Government proposes to form a partnership with the DB Contractor to develop a cohesive building team. This partnership will involve the COE project delivery team members, facility users, facility command representatives, installation representatives, Designers of Record, major subcontractors, contractor quality control staff, and contractor construction management staff. This partnership will strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership will be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs. Normally, partnering meetings will be held at or in the vicinity of the project installation.

3.1.3.2. As part of the partnering process, the Government and Contractor shall develop, establish, and agree to comprehensive design development processes including conduct of conferences, expectations of design development at conferences, fast-tracking, design acceptance, Structural Interior Design (SID)/ Furniture, Fixtures & Equipment (FF&E) design approval, project closeout, etc. The government will explain contract requirements and the DB Contractor shall review their proposed project schedule and suggest ways to streamline processes.

3.1.4. Initial Design Conference

The initial design conference may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the initial design conference. Any design work conducted after award and prior to this conference should be limited to site and is discouraged for other items. All Designers of Record shall participate in the conference. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning the BIM Implementation Plan demonstration at this meeting. The DB Contractor shall conduct the initial design conference.

3.1.5. Pre-Construction Conference

Before starting construction activities, the Contractor and Government will jointly conduct a pre-construction administrative conference to discuss any outstanding requirements and to review local installation requirements for start of construction. It is possible there will be multiple Pre-Construction Conferences based on the content of the design packages selected by the Contractor. The Government will provide minutes of this meeting to all participants.

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

The stages of design submittals described below define Government expectations with respect to process and content. The Contractor shall determine how to best plan and execute the design and review process for this project, within the parameters listed below. As a minimum, the Government expects to see at least one interim design submittal, at least one final design submittal before construction of a design package may proceed and at least one Design Complete submittal that documents the accepted design. The Contractor may sub-divide the design into separate packages for each stage of design and may proceed with construction of a package after the Government accepts the final design for that package. See discussion on waivers to submission of one or more intermediate design packages where the parties partner during the design process. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning BIM and the various stages of design submittals and over-the-shoulder progress reviews.

3.2.1. Site/Utilities

To facilitate fast-track design-construction activities the contractor may submit a final (100%) site and utility design as the first design submittal or it may elect to submit interim and final site and utility design submittals as explained below. Following review, resolution, and incorporation of all Government comments, and submittal of a satisfactory set of site/utility design documents, after completing all other pre-construction requirements in this contract and after the pre-construction meeting, the Government will allow the Contractor to proceed with site development activities, including demolition where applicable, within the parameters set forth in the accepted design submittal. For the first site and utility design submission, whether an interim or final, the submittal review, comment, and resolution times from this specification apply, except that the Contractor shall allow the Government a 14 calendar day review period, exclusive of mailing time. No on-site construction activities shall begin prior to written Government clearance to proceed.

3.2.2. Interim Design Submittals

The Contractor may submit either a single interim design for review, representing a complete package with all design disciplines, or split the interim design into smaller, individual design packages as it deems necessary for fast-track construction purposes. As required in Section 01 32 01.00 10 PROJECT SCHEDULE, the Contractor shall schedule its design and construction packaging plan to meet the contract completion period. This submission is the Government's primary opportunity to review the design for conformance to the solicitation and to the accepted contract proposal and to the Building Codes at a point where required revisions may be still made, while minimizing lost design effort to keep the design on track with the contract requirements. The requirements for the interim design review submittals and review conferences are described hereinafter. This is not necessarily a hold point for the design process; the Contractor may designate the interim design submittal(s) as a snapshot and proceed with design development at its own risk. See below for a waiver, where the parties establish an effective over-the-shoulder progress review procedure through the partnering process that would eliminate the need for or expedite a formal intermediate design review on one or more individual design packages.

3.2.3. Over-the-Shoulder Progress Reviews

To facilitate a streamlined design-build process, the Government and the Contractor may agree to one-on-one reviewer or small group reviews, electronically, on-line (if available within the Contractor's standard design practices) or at the Contractor's design offices or other agreed location, when practicable to the parties. The Government and Contractor will coordinate such reviews to minimize or eliminate disruptions to the design process. Any data required for these reviews shall normally be provided in electronic format, rather than in hard copy. If the Government and Contractor establish and implement an effective, mutually agreeable partnering procedure for regular (e.g., weekly) over-the shoulder review procedures that allow the Government reviewers the opportunity to keep fully informed of the progress, contents, design intent, design documentation, etc. of the design package, the Government will agree to waive or to expedite the formal intermediate design review period for that package. The Contractor shall still be required to submit the required intermediate design documentation, however the parties may agree to how that material will be provided, in lieu of a formal consolidated submission of the package. It should be noted that Government funding is extremely limited for non-local travel by design reviewers, so the maximum use of virtual teaming methods must be used. Some possible examples include electronic file sharing, interactive software with on-line or telephonic conferencing, televideo conferencing, etc. The Government must still perform its Code and Contract conformance reviews, so the Contractor is encouraged to partner with the reviewers to find ways to facilitate this process and to facilitate meeting or bettering the design-build schedule. The Contractor shall maintain a fully functional configuration management system as described herein to track design revisions, regardless of whether or not there is a need for a formal intermediate design review. The formal intermediate

review procedures shall form the contractual basis for the official schedule, in the event that the partnering process determines that the formal intermediate review process to be best suited for efficient project execution. However, the Government pledges to support and promote the partnering process to work with the Contractor to find ways to better the design schedule.

3.2.4. Final Design Submissions

This submittal is required for each design package prior to Government acceptance of that design package for construction. The requirements for the final design submittal review conferences and the Government's acceptance for start of construction are described herein after.

3.2.5. Design Complete Submittals

After the final design submission and review conference for a design package, revise the design package to incorporate the comments generated and resolved in the final review conferences, perform and document a back-check review and submit the final, design complete documents, which shall represent released for construction documents. The requirements for the design complete submittals are described hereinafter.

3.2.6. Holiday Periods for Government Review or Actions

Do not schedule meetings, Government reviews or responses during the last two weeks of December or other designated Government Holidays (including Friday after Thanksgiving). Exclude such dates and periods from any durations specified herein for Government actions.

3.2.7. Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers' other scheduled activities. If a design submittal is over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. During the design process, this will facilitate and help streamline the design and review schedule. After the final design is accepted, this process provides control of and documents revisions to the accepted design (See Special Contract Requirement: Deviating From the Accepted Design). The system shall include appropriate authorities and concurrences to authorize revisions, including documentation as to why the revision must be made. The DCM data shall be available to the Government reviewers at all times. The Contractor may use its own internal system with interactive Government concurrences, where necessary or may use the Government's "DrChecks Design Review and Checking System" (see below and Attachment C).

3.3.2. Tracking Design Review Comments

Although the Contractor may use its own internal system for overall design configuration management, the Government and the Contractor shall use the DrChecks Design Review and Checking System to initiate, respond to, resolve and track Government design compliance review comments. This system may be useful for other data which needs to be interactive or otherwise available for shared use and retrieval. See Attachment C for details on how to establish an account and set-up the DrChecks system for use on the project.

3.3.3. Design and Code Checklists

Develop and complete various discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists with each design submittal, as applicable, as part of the project documentation. See Section 01 45 04.00 10 Contractor Quality Control, Attachment D for a Sample Fire Protection and Life Safety Code review checklist and Attachment E for LEED SUBMITTALS.

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

At least one interim design submittal, review and review conference is required for each design package (except that, per paragraph 3.2.1, the Contractor may skip the interim design submission and proceed directly to final design on the sitework and utilities package). The DB Contractor may include additional interim design conferences or over-the-shoulder reviews, as needed, to assure continued government concurrence with the design work. Include the interim submittal review periods and conferences in the project schedule and indicate what part of the design work is at what percentage of completion. The required interim design conferences shall be held when interim design requirements are reached as described below. See also Paragraph: **Over-the-Shoulder Progress Reviews** for a waiver to the formal interim design review.

3.4.2. Procedures

After receipt of an Interim Design submission, allow the Government fourteen (14) calendar days after receipt of the submission to review and comment on the interim design submittal. For smaller design packages, especially those that involve only one or a few separate design disciplines, the parties may agree on a shorter review period or alternative review methods (e.g., over-the-shoulder or electronic file sharing), through the partnering process. For each interim design review submittal, the COR will furnish, to the Contractor, a single consolidated, validated listing of all comments from the various design sections and from other concerned agencies involved in the review process using the DrChecks Design Review and Checking System. The review will be for conformance with the technical requirements of the solicitation and the Contractor's RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he/she must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. Furnish disposition of all comments, in writing, through DrChecks. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the COR in writing immediately. The Interim Review conference will be held for each design submittal at the installation. Bring the personnel that developed the design submittal to the review conference. The conference will take place the week after the receipt of the comments by the Contractor. For smaller fast-track packages that involve only a few reviewers, the parties may agree to alternative conferencing methods, such as teleconferencing, or televideo, where available, as determined through Partnering.

3.4.3. Conference Documentation

3.4.3.1. In order to facilitate and accelerate the Government code and contract conformance reviews, identify, track resolution of and maintain all comments and action items generated during the design process and make this available to the designers and reviewers prior to the Interim and subsequent design reviews.

3.4.3.2. The DB Contractor shall prepare meeting minutes and enter final resolution of all comments into DrChecks. Copies of comments, annotated with comment action agreed on, will be made available to all parties before the conference adjourns. Unresolved problems will be resolved by immediate follow-on action at the end of conferences. Incorporate valid comments. The Government reserves the right to reject design document submittals if comments are significant. Participants shall determine if any comments are critical enough to require further design development prior to government concurrence. Participants shall also determine how to proceed in order to obtain government concurrence with the design work presented.

3.5. INTERIM DESIGN REQUIREMENTS

Interim design deliverables shall include drawings, specifications, and design analysis for the part of design that the Contractor considers ready for review.

3.5.1. Drawings

Include comments from any previous design conferences incorporated into the documents to provide an interim design for the "part" submitted.

3.5.2. Design Analyses

3.5.2.1. The designers of record shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. Address design substantiation required by the applicable codes and references and pay particular attention to the following listed items:

3.5.2.2. For parts including sitework, include site specific civil calculations.

3.5.2.3. For parts including structural work, include structural calculations.

- (a) Identify all loads to be used for design.
- (b) Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.
- (c) Provide calculations for all principal roof, floor, and foundation members and bracing and secondary members.
- (d) Provide complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.
- (e) Computer generated calculations must identify the program name, source, and version. Provide input data, including loads, loading diagrams, node diagrams, and adequate documentation to illustrate the design. The schematic models used for input must show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings, induced settlements/deflections, etc., and a list of load combinations. Include an output listing for maximum/minimum stresses/forces and deflections for each element and the reactions for each loading case and combination.
- (f) See also the Security (Anti-Terrorism) requirements below for members subject to Anti-Terrorist Force Protection (ATFP) and Progressive Collapse requirements.
- (g) Fully coordinate and integrate the overall structural design between two different or interfacing construction types, such as modular and stick-built or multistory, stacked modular construction. Provide substantiation of structural, consolidation/settlement analysis, etc., as applicable, through the interfaces.

3.5.2.4. For Security (Anti-Terrorism): Provide a design narrative and calculations where applicable, demonstrating compliance with each of the 22 standards in UFC 4-010-01, which includes Design of Buildings to Resist Progressive Collapse (use the most recent version of UFC 4-023-03, regardless of references to any specific version in UFC 4-010-01). Where sufficient standoff distance is not being provided, show calculations for blast resistance of the structural system and building envelope. Show complete calculations for members subjected to ATFP loads, e.g., support members of glazed items (jamb, headers, sills) connections of windows to support members and connections of support members to the rest of the structure. For 3 story and higher buildings, provide calculations to demonstrate compliance with progressive collapse requirements.

3.5.2.5. For parts including architectural work, include building floor area analysis.

3.5.2.6. For parts including mechanical work, include HVAC analysis and calculations. Include complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation is required (see paragraph 3.5.5.2 for list of acceptable software). Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

3.5.2.7. For parts including life safety, include building code analysis and sprinkler and other suppression systems. Notwithstanding the requirements of the Codes, address the following:

- (a) A registered fire protection engineer (FPE) must perform all fire protection analyses. Provide the fire protection engineer's qualifications. See Section 01 10 00, paragraph 5 for qualifications.

- (b) Provide all references used in the design including Government design documents and industry standards used to generate the fire protection analysis.
- (c) Provide classification of each building in accordance with fire zone, building floor areas and height and number of stories.
- (d) Provide discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems.
- (e) Provide hydraulic calculations based on water flow test for each sprinkler system to insure that flow and pressure requirements can be met with current water supply. Include copies of Contractor's water flow testing done to certify the available water source.

3.5.2.8. For parts including plumbing systems:

- (a) List all references used in the design.
- (b) Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.
- (c) Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; LP gas piping and tanks, fuel oil piping and tanks, etc., as applicable.
- (d) When the geotechnical report indicates expansive soils are present, indicate in the first piping design submittal how piping systems will be protected against damage or backfall/backflow due to soil heave (from penetration of slab to the 5 foot building line).

3.5.2.9. For elevator systems:

- (a) List all criteria codes, documents and design conditions used.
- (b) List any required permits and registrations for construction of items of special mechanical systems and equipment.

3.5.2.10. For parts including electrical work, include lighting calculations to determine maintained foot-candle levels, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations.

3.5.2.11. For parts including telecommunications voice/data (including SIPRNET, where applicable), include analysis for determining the number and placement of outlets

3.5.2.12. For Cathodic Protection Systems, provide the following stamped report by the licensed corrosion engineer or NACE specialist with the first design submission. The designer must be qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. He/she must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified Cathodic Protection Specialist, or must be a registered professional engineer with a minimum of five years experience in corrosion control and cathodic protection. Clearly describe structures, systems or components in soil or water to be protected. Describe methods proposed for protection of each.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended

design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

3.5.3.2. Vehicle Pavements: The Contractor's geotechnical report shall contain flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Provide Information on the types of base course materials available in the area and design strengths.

3.5.3.3. The Contractor and the professional geotechnical engineer consultant shall certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. The certification shall be stamped by the consulting professional geotechnical engineer and shall be submitted with the first design submission. If revisions are made to the initial design submission, a new certification shall be provided with the final design submission.

3.5.4. LEED Documentation:

Assign a LEED Accredited Professional, responsible to track LEED planning, performance and documentation for each LEED credit through construction closeout. Incorporate LEED credits in the plans, specifications and design analyses. Develop LEED supporting documentation as a separable portion of the Design Analysis and provide with each required design submittal. Include the LEED Project checklist for each non-exempt facility (one checklist may be provided for multiple facilities in accordance with the LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects and the LEED SUBMITTALS (Attachment E, herein) with each submittal. Final design submittal for each portion of the work must include all required design documentation relating to that portion of work (example - all site credit design documents with final site design). Submittal requirements are as indicated in Attachment E, LEED SUBMITTALS. Submit all documentation indicated on Attachment E as due at final design at final design submittal (for fast-track projects with multiple final design submittals, this shall be at the last scheduled final design submittal). All project documentation related to LEED shall conform to USGBC requirements for both content and format, including audit requirements and be separate from other design analyses. Maintain and update the LEED documentation throughout project progress to construction closeout and shall compile product data, receipts, calculations and other data necessary to substantiate and support all credits claimed. The Government may audit any or all individual credits. Audit documentation is not required to be submitted unless requested. These requirements apply to all projects. If the project requires the Contractor to obtain USGBC certification, the Contractor shall also be responsible for obtaining USGBC certification and shall provide written evidence of certification with the construction closeout LEED documentation submittal. Install the USGBC building plaque at the location indicated by the Government upon receipt. If Contractor obtains USGBC interim design review, submit the USGBC review to the Government within 30 days of receipt for information only.

3.5.4.1. LEED Documentation for Technology Solution Set. If the Solicitation provides a Prescriptive Technology Solution Set, use of the Technology Solution set has no effect on LEED documentation requirements. Provide all required LEED documentation, including energy analysis, in accordance with LEED requirements when using the Technology Solution Set.

3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope

Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC Section of the Design Analysis shall include completed forms titled "HVAC Mandatory Provisions - Part II" and "HVAC Prescriptive Requirements - Part III". The Plumbing Section of the Design Analysis shall include a completed form titled "Service Water Heating Compliance Documentation". The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1-2004 Chapter 8 Power were met. The Electrical Section of the Design Analysis shall also include a completed form titled "Lighting Compliance Documentation".

3.5.5.2. Interim and Final Design submittals which address energy consuming systems, (heating, cooling, service hot water, lighting, power, etc.) must also include calculations in a separate Energy Conservation Section of the Design Analysis which demonstrate and document (a) the baseline energy consumption for the facility or facilities under contract, that would meet the requirements of ANSI/ASHRAE/IESNA Standard 90.1 and (b) the energy consumption of the facility or facilities under contract utilizing the materials and methods required by this construction contract. Use the USGBC Energy and Atmosphere (EA) Credit 1 compliance template / form or an equivalently detailed form for documenting compliance with the energy reduction requirements. This template / form is titled PERFORMANCE RATING METHOD and is available when the project is registered for LEED. The calculation methodology used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with two exceptions: a) receptacle and process loads may be omitted from the calculation; and b) the definition of the terms in the formula for Percentage Improvement found in paragraph G1.2 are modified as follows: Baseline Building Performance shall mean the annual energy consumption calculated for a building design intended for use as a baseline for rating above standard design meeting the minimum requirements of the energy standard, and Proposed Building Performance shall mean annual energy consumption calculated for the proposed building design intended for construction. This calculation shall address all energy consuming systems in a single integrated methodology. Include laboratory fume hoods and kitchen ventilation loads in the energy calculation. They are not considered process loads. Individual calculations for heating, cooling, power, lighting, power, etc. systems will not be acceptable. The following building simulation software is acceptable for use in calculating building energy consumption: Hourly Analysis Program (HAP) by Carrier Corp., TRACE 700 by Trane Corp., DOE-2 by US Department of Energy, EnergyPlus by DOD/DOE.

3.5.6. Specifications

Specifications may be any one of the major, well known master guide specification sources (use only one source) such as MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. (including specifications from these sources). Manufacturers' product specifications, utilizing CSI's Manu-Spec, three part format may be used in conjunction with the selected specifications. The designers of record shall edit and expand the appropriate Specifications to insure that all project design requirements, current code requirements, and regulatory requirements are met. Specifications shall clearly identify, where appropriate, specific products chosen to meet the contract requirements (i.e., manufacturers' brand names and model numbers or similar product information).

3.5.7. Building Rendering

Present and provide a draft color computer, artist, or hand drawn rendering with the conceptual design submittal of the building exterior. Perspective renderings shall include a slightly overhead view of the entire building to encompass elevations and the roof configuration of the building. After Government review and acceptance, provide a final rendering, including the following:

Three (3) 18" x 24" color prints, framed and matted behind glass with project title underneath the print.

One (1) Image file (high resolution) in JPG format on CD for those in the submittal distribution list.

3.5.8. Interim Building Design Contents

The following list represents what the Government considers should be included in the overall completed design for a facility or project. It is not intended to limit the contractor from providing different or additional information as needed to support the design presented, including the require design analyses discussed above. As the Contractor develops individual design packages and submits them for Interim review, include as much of the applicable

information for an individual design package as is developed at the Interim design level for review purposes. These pieces shall be developed as the design progresses toward the design complete stage.

3.5.8.1. Lawn and Landscaping Irrigation System

3.5.8.2. Landscape, Planting and Turfing

3.5.8.3. Architectural

- (a) Design Narrative
- (b) Architectural Floor Plans, Typical Wall and Roof Sections, Elevations
- (c) Finish schedule
- (d) All required equipment
- (e) Special graphics requirements
- (f) Door and Window Schedules
- (g) Hardware sets using BHMA designations
- (h) Composite floor plan showing all pre-wired workstations
- (i) Structural Interior Design (SID) package: See ATTACHMENT A for specific requirements
- (j) Furniture, Fixtures & Equipment (FF&E) design package: See ATTACHMENT B for specific requirements

3.5.8.4. Structural Systems. Include:

- (a) Drawings showing principal members for roof and floor framing plans as applicable
- (b) Foundation plan showing main foundation elements where applicable
- (c) Typical sections for roof, floor, and foundation conditions

3.5.8.5. Plumbing Systems

- (a) Show locations and general arrangement of plumbing fixtures and major equipment
- (b) Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), (natural gas and meter as required), (LP gas), (fuel oil) and other specialty systems as applicable.
- (c) Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

3.5.8.6. HVAC Systems

- (a) Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:
 - (1) Room designations.
 - (2) Mechanical legend and applicable notes.
 - (3) Location and size of all ductwork and piping.
 - (4) Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).
 - (5) Pre-Fabricated Paint Spray Booth (where applicable to project scope)
 - (6) Paint Preparation Area (where applicable to project scope)
 - (7) Exhaust fans and specialized exhaust systems.
 - (8) Thermostat location.
 - (9) Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).
 - (10) Location of all air handling equipment.

- (11) Air balancing information.
- (12) Flue size and location.
- (13) Piping diagram for forced hot water system (if used).
- (b) Equipment Schedule: Provide complete equipment schedules. Include:
 - (1) Capacity
 - (2) Electrical characteristics
 - (3) Efficiency (if applicable)
 - (4) Manufacturer's name
 - (5) Optional features to be provided
 - (6) Physical size
 - (7) Minimum maintenance clearances
- (a) Details: Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.
- (b) HVAC Controls: Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

3.5.8.7. Fire Protection and Life Safety.

- (a) Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:
 - (1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.
 - (2) The location and coverage of any fire detection systems
 - (3) The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)
 - (4) The location of any other major fire protection equipment
 - (5) Indicate any hazardous areas and their classification
 - (6) Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required
- (b) Working plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

3.5.8.8. Elevators. Provide:

- (a) Description of the proposed control system
- (b) Description, approximate capacity and location of any special mechanical equipment for elevators.

3.5.8.9. Electrical Systems.

- (a) Electrical Floor Plan(s): Show all principle architectural features of the building which will affect the electrical design. Show the following:
 - (1) Room designations.
 - (2) Electrical legend and applicable notes.
 - (3) Lighting fixtures, properly identified.
 - (4) Switches for control of lighting.
 - (5) Receptacles.

- (6) Location and designation of panelboards. Clearly indicate type of mounting required (flush or surface) and reflect accordingly in specifications.
- (7) Service entrance (conduit and main disconnect).
- (8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.
- (b) Building Riser Diagram(s) (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.
- (c) Load Center Panelboard Schedule(s): Indicate the following information:
 - (1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting.
 - (2) Branch Circuit Designations.
 - (3) Load Designations.
 - (4) Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)
 - (5) Branch Circuit Connected Loads (AMPS).
 - (6) Special Features
- (d) Lighting Fixture Schedule(s): Indicate the following information:
 - (1) Fixture Designation.
 - (2) General Fixture Description.
 - (3) Number and Type of Lamp(s).
 - (4) Type of Mounting.
 - (5) Special Features.
- (e) Details: Provide construction details, sections, elevations, etc. only where required for clarification of methods and materials of design.

3.5.8.10. Electronic Systems including the following responsibilities:

- (a) Fire Detection and Alarm System. Design shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)
- (b) Fire Suppression System Control. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans "FS system components" (as opposed to "Fire Alarm components"). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each.
- (c) Public Address System
- (d) Special Grounding Systems. Completely reflect all design requirements in the specifications and drawings. Specifications shall require field tests (in the construction phase), witnessed by the Government, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any.
- (e) Cathodic Protection.
- (f) Intrusion Detection, Card Access System
- (g) Central Control and Monitoring System
- (h) Mass Notification System
- (i) Electrical Power Distribution Systems

3.5.8.11. Separate detailed Telecommunications drawings for Information Systems including the following responsibilities:

- (a) Telecommunications Cabling
- (b) Supporting Infrastructure
- (a) Outside Plant (OSP) Cabling - Campus or Site Plans - Exterior Pathways and Inter-Building Backbones
 - (a) Include a layout of the voice/data outlets (including voice only wall & pay phones) on telecommunication floor plan drawing, location of SIPRNET data outlets (where applicable), and a legend and symbol definition to indicate height above finished floor. Show size of conduit and cable type and size on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Show underground distribution conduit and cable with sizing from point of presence to entrance facility of building.
- (b) Layout of complete building per floor - Serving Zone Boundaries, Backbone Systems, and Horizontal Pathways including Serving Zones Drawings - Drop Locations and Cable ID's
- (c) Communication Equipment Rooms - Plan Views - Tech and AMEP/Elevations - Racks and Walls. Elevations with a detailed look at all telecomm rooms. Indicate technology layout (racks, ladder-racks, etc.), mechanical/electrical layout, rack elevation and backboard elevation. They may also be an enlargement of a congested area of T1 or T2 series drawing.

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

A final design review and review conference will be held upon completion of final design at the project installation, or – where equipment is available - by video teleconference or a combination thereof, for any design package to receive Government acceptance to allow release of the design package for construction. For smaller separate design packages, the parties may agree on alternative reviews and conferences (e.g., conference calls and electronic file sharing, etc.) through the Partnering process. Include the final design conference in the project schedule and shall indicate what part of the design work is at 100% completion. The final design conference will be held after the Government has had seven (7) calendar days after receipt of the submission to review the final design package and supporting data. For smaller packages, especially those involving only one or a few design disciplines the parties may agree on a shorter period.

3.7. FINAL DESIGN REQUIREMENTS

Final design deliverables for a design package shall consist of 100% complete drawings, specifications, submittal register and design analyses for Government review and acceptance. The 100% design submission shall consist of drawings, specifications, updated design analyses and any permits required by the contract for each package submitted. In order to expedite the final design review, prior to the conference, ensure that the design configuration management data and all review comment resolutions are up-to-date. Include the 100% SID and 100% FF&E binders for government approval. The Contractor shall have performed independent technical reviews (ITR's) and back-checks of previous comment resolutions, as required by Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL, including providing documentation thereof.

3.7.1. Drawings

3.7.1.1. Submit drawings complete with all contract requirements incorporated into the documents to provide a 100% design for each package submitted.

3.7.1.2. Prepare all drawings with the Computer-Aided Design and Drafting (CADD)/Computer-Aided Design (CAD) system, organized and easily referenced electronically, presenting complete construction information.

3.7.1.3. Drawings shall be complete. The Contractor is encouraged to utilize graphics, views, notes, and details which make the drawings easier to review or to construct but is also encouraged to keep such materials to those that are necessary.

3.7.1.4. Provide detail drawings that illustrate conformance with the contract. Include room finish schedules, corresponding color/finish/special items schedules, and exterior finish schedules that agree with the submitted SID binders.

3.7.1.5. The design documents shall be in compliance with the latest version of the A/E/C CADD Standard, available at <https://caddbim.usace.army.mil/CAD>. Use the approved vertical Corps of Engineers title blocks and borders on all drawings with the appropriate firm name included within the title block area.

3.7.1.6. CAD System and Building Information Modeling (BIM) (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order.)

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM file format and the USACE Bentley BIM v8 Workspace.

(a) CAD Data Final File Format: During the design development capture geo-referenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc) as a result of this contract. There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the government. Close-out requirements at the as-built stage; require final geo-referenced GIS Database of the new facility along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Masterplan or Enterprise GIS System. See also, Section 01 78 02.00 10 Closeout Submittals.

(b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.

(c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Drawing files with external references or special fonts are not acceptable. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

(d) Deliver BIM Model and associated Facility Data files in their native format. At a minimum, BIM files shall address major architecture design elements, major structural components, mechanical systems and electrical/communication distribution and elements as defined in Attachment F. See Attachment F for additional BIM requirements.

(e) Drawing Index: Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.

(f) Hard Copies: Plot submitted hard copy drawings directly from the "electronic drawing files" and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp, sign and date original hard copy sheets as Released For Construction, and provide copies for distribution from this set.

3.7.2. Design Analyses

3.7.2.1. The designers of record shall update, finalize and present design analyses with calculations necessary to substantiate and support all design documents submitted.

3.7.2.2. The responsible DOR shall stamp, sign and date the design analysis. Identify the software used where, applicable (name, version, vendor). Generally, provide design analyses, individually, in an original (file copy) and one copy for the assigned government reviewer.

3.7.2.3. All disciplines review the LEED design analysis in conjunction with their discipline-specific design analysis; include a copy of the separable LEED design analysis in all design analysis submittals.

3.7.2.4. Do not combine multi-disciplined volumes of design-analysis, unless multiple copies are provided to facilitate multiple reviewers (one copy per each separate design analysis included in a volume).

3.7.3. Specifications

Specifications shall be 100% complete and in final form.

3.7.4. Submittal Register

Prepare and update the Submittal Register and submit it with the 100% design specifications (see Specification Section 01 33 00, SUBMITTAL PROCEDURES) with each design package. Include the required submittals for each specification section in a design package in the submittal register.

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

This form itemizes the types, quantities and costs of various equipment and systems that comprise the project, for the purpose of transferring the new construction project from the Corps Construction Division to the Installation's inventory of real property. The Government will furnish the DB Contractor's design manager a DD Form 1354 checklist to use to produce a draft Form 1354. Submit the completed checklist and prepared draft Form DD 1354 with the 100% design in the Design Analysis. The Corps will use these documents to complete the final DD 1354 upon completion of construction.

3.7.6. Acceptance and Release for Construction

3.7.6.1. At the conclusion of the Final Design Review (after resolutions to the comments have been agreed upon between DOR and Government reviewers), the Contracting Officer or the ACO will accept the Final Design Submission for the design package in writing and allow construction to start for that design package. The Government may withhold acceptance until all major corrections have been made or if the final design submission requires so many corrections, even though minor, that it isn't considered acceptably complete.

3.7.6.2. Government review and acceptance of design submittals is for contract conformance only and shall not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor's accepted contract proposal, or limit the Contractor's responsibility of design as prescribed under Special Contract Requirement: "Responsibility of the Contractor for Design" or limit the Government's rights under the terms of the contract. The Government reserves the right to rescind inadvertent acceptance of design submittals containing contract deviations not separately and expressly identified in the submittal for Government consideration and approval.

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

After the Final Design Submission and Review Conference and after Government acceptance of the Final Design submission, revise the design documents for the design package to incorporate the comments generated and resolved in the final review conference, perform and document a back-check review and submit the final, design complete documents. Label the final design complete documents "FOR CONSTRUCTION" or use similar language. In addition to the final drawings and specifications, the following deliverables are required for distribution and field use. The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and the back-check. As part of the quality assurance process, the Government may perform a back-check of the released for construction documentation. Promptly correct any errors or omissions found during the Government back-check. The Government may withhold retainage from progress payments for work or materials associated with a final design package until this submittal has been received and the Government determines that it is complete.

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section. Provide copies of each design submittal and design substantiation as follows (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order):

Activity and Address	Drawing Size (Full Size) [Not Supplied - Submittal Required : FULL SIZE] Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) [Not Supplied - Submittal Required : HALF SIZE] Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF & .dgn)	Furniture Submittal (FFE)	Structural Interior Design Submittal	BIM Data DVD (Per Attachment F)
Commander, U.S. Army Engineer District [Not Supplied - District Information General : CONSTRUCTION DISTRICT]	1/1	1/1	1/1	1	1	1	1
Commander, U.S. Army Engineer District, Center of Standardization Matt Scanlon	1/1	1/1	1/1	1	1	1	1
Installation	4/4	4/4	4/4	4	1	1	1
U.S. Army Corps of Engineers Construction Area Office	8/8	8/8	8/8	8	1	1	1
Information Systems Engineering Command (ISEC)	0/0	0/1	0/0	1	1 (Electronic only)	N/A	1
Other Offices	4/4	4/4	4/4	4	2	2	4

***NOTE:** For partial sets of drawings, specifications and design analyses, see paragraph 3.9.3.3, below.

****NOTE:** When specified below in 3.9.2, furnish Installation copies of Drawings as paper copies, in lieu of the option to provide secure web-based submittals.

3.9.2. Web based Design Submittals

Except for full or half-sized drawings for Installation personnel, as designated in the Table above, Web based design submittals will be acceptable as an alternative to the paper copies listed in the Table above, provided a single hard-copy PDF based record set is provided to the Contracting Officer for record purposes. Where the

contract requires the Contractor to submit documents to permitting authorities, still provide those authorities paper copies (or in an alternate format where required by the authority). Web based design submittal information shall be provided with adequate security and availability to allow unlimited access those specifically authorized to Government reviewers while preventing unauthorized access or modification. File sizes must be of manageable size for reviewers to quickly download or open on their computers. As a minimum, drawings shall be full scale on American National Standards Institute (ANSI) D sheets (34" x 22"). In addition to the optional website, provide the BIM data submission on DVD to each activity and address noted above in paragraph 3.9.1 for each BIM submission required in Attachment F.

3.9.3. Mailing of Design Submittals

3.9.3.1. Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract (or individual task order if this is an indefinite delivery/indefinite quantity, task order contract). Mail the submittals to five (5) different addresses. Assemble drawing sheets, specs, design analyses, etc. into individual sets; do not combine duplicate pages from individual sets so that the government has to assemble a set.

3.9.3.2. Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

3.9.3.3. Provide partial sets of drawings, specifications, design analyses, etc., as designated in the Table in paragraph 3.9.1, to those reviewers who only need to review their applicable portions of the design, such as the various utilities. The details of which office receives what portion of the design documentation will be worked out after award.

3.10. AS-BUILT DOCUMENTS

Provide as-built drawings and specifications in accordance with Section 01 78 02.00 10, CLOSEOUT SUBMITTALS. Update LEED design phase documentation during construction as needed to reflect construction changes and advancing project completion status (example - Commissioning Plan updates during construction phase) and include updated LEED documentation in construction closeout submittal.

ATTACHMENT A STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

1.0 GENERAL INFORMATION

Structural Interior Design includes all building related elements and components generally part of the building itself, such as wall finishes, ceilings finishes, floor coverings, marker/bulletin boards, blinds, signage and built in casework. Develop the SID in conjunction with the furniture footprint.

2.0 STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

2.1. FORMAT AND SCHEDULE

Prepare and submit for approval an interior and exterior building finishes scheme for an interim design submittal. The DOR shall meet with and discuss the finish schemes with the appropriate Government officials prior to preparation of the schemes to be presented. Present original sets of the schemes to reviewers at an interim design conference.

At the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers, the Contractor may proceed to final design with the interior finishes scheme presented.

The SID information and samples are to be submitted in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover. When there are numerous pages with thick samples, use more than one binder. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Structural Interior Design" package. Include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

2.1.1. Narrative of the Structural Interior Design Objectives

The SID shall include a narrative that discusses the building related finishes. Include topics that relate to base standards, life safety, sustainable design issues, aesthetics, durability and maintainability, discuss the development and features as they relate to the occupants requirements and the building design.

2.1.2. Interior Color Boards

Identify and key each item on the color boards to the contract documents to provide a clear indication of how and where each item will be used. Arrange finish samples to the maximum extent possible by room type in order to illustrate room color coordination. Label all samples on the color boards with the manufacturer's name, patterns and colors name and number. Key or code samples to match key code system used on contract drawings.

Material and finish samples shall indicate true pattern, color and texture. Provide photographs or colored photocopies of materials or fabrics to show large overall patterns in conjunction with actual samples to show the actual colors. Finish samples must be large enough to show a complete pattern or design where practical.

Color boards shall include but not be limited to original color samples of the following:

All walls finishes and ceiling finishes, including corner guards, acrylic wainscoting and wall guards/chair rail finishes

All tile information, including tile grout color and tile patterns.

- All flooring finishes, including patterns.
- All door, door frame finishes and door hardware finishes
- All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim

- All millwork materials and finishes (cabinets, counter tops, etc.)
- All window frame finishes and window treatments (sills, blinds, etc.)

Color board samples shall reflect all actual finish textures, patterns and colors required as specified. Patterned samples shall be of sufficient size to adequately show pattern and its repeat if a repeat occurs.

2.1.3. Exterior Color Boards

Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

- All Roof Finishes
- All Brick and Cast Stone Samples
- All Exterior Insulation and Finish Samples
- All Glass Color Samples
- All Exterior Metals Finishes
- All Window & Door Frame Finishes
- All Specialty Item Finishes, including trim

Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

2.2. STRUCTURAL INTERIOR DESIGN DOCUMENTS

2.2.1. General

Structural interior design related drawings must indicate the placement of extents of SID material, finishes and colors and must be sufficiently detailed to define all interior work. The following is a list of minimum requirements:

2.2.2. Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

2.2.3. Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes.

2.2.4. Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

2.2.5. Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

2.2.6. Interior Elevations, Sections and Details

Indicate material, color and finish placement.

ATTACHMENT B FURNITURE, FIXTURES & EQUIPMENT (FF&E) REQUIREMENTS

1.0 FF&E REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

1.1. FORMAT AND SCHEDULE

Prepare and submit for approval a comprehensive FF&E scheme for an interim design submittal. The Contractor's interior designer, not a furniture dealer, shall develop the design. FF&E is the selection, layout, specification and documentation of furniture includes but is not limited to workstations, seating, tables, storage and shelving, filing, trash receptacles, clocks, framed artwork, artificial plants, and other accessories. Contract documentation is required to facilitate pricing, procurement and installation. The FF&E package is based on the furniture footprint developed in the Structural Interior Design (SID) portion of the interior design. Develop the FF&E package concurrently with the building design to ensure that there is coordination between the electrical outlets, switches, J-boxes, communication outlets and connections, and lighting as appropriate. In addition, coordinate layout with other building features such as architectural elements, thermostats, location of TV's, GF/GI equipment (for example computers, printers, copiers, shredders, faxes), etc. Locate furniture in front of windows only if the top of the item falls below the window and unless otherwise noted, do not attach furniture including furniture systems to the building. If project has SIPRNET and/or NIPRNET, coordinate furniture layout with SIPRNET and NIPRNET separation requirements. Verify that access required by DOIM for SIPRNET box and conduit is provided. The DOR shall interview appropriate Government personnel to determine FF&E requirements for furniture and furnishings prior to preparation of the scheme to be presented. Determine FFE items and quantities by, but not limited to: (1) the number of personnel to occupy the building, (2) job functions and related furniture/office equipment to support the job function, (3) room functions, (4) rank and grade. Present original sets of the scheme to reviewers at an interim design conference upon completion of the interim architectural submittal or three months prior to the submittal of the final FF&E package (whichever comes first).

Design may proceed to final with the FF&E scheme presented at the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers.

Provide six copies of the electronic versions of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide unbound, electronic drawings in CAD and BIM. Provide all files needed to view complete drawings. Submit all text documents in Microsoft Word or Excel..

Submit three copies of the final and complete FF&E information and samples in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first). Use more than one binder when there are numerous pages with thick samples. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out for upholstery and finish boards. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Furniture, Fixtures & Equipment" package and include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Provide electronic copies of all documents upon completion of the final architectural submittal or ten months prior to the contract completion date (whichever comes first), to ensure adequate time for furniture acquisition. Provide six compact disks with all drawings files needed to view the complete drawings unbound and in the latest version AutoCAD. Provide six additional compact disks of all text documents in Microsoft Word or Excel.

Design submittal requirements include, but are not limited to:

1.1.1. Narrative of Interior Design Objectives

Provide a narrative description of the furniture, to include functional, safety and ergonomic considerations, durability, sustainability, aesthetics, and compatibility with the building design.

1.1.2. Furniture Order Form

Prepare one Furnishings Order Form for each item specified in the design. This form identifies all information required to order each individual item. In addition to the project name and location, project number, and submittal phase, the order form must include:

- (a) Furniture item illustration and code
- (b) Furniture item name
- (c) Job name, location, and date
- (d) General Services Administration (GSA) FSC Group, part, and section
- (e) Manufacturer, Product name and Product model number or National Stock Number (NSN)
- (f) Finish name and number (code to finish samples)
- (g) Fabric name and number, minimum Wyzenbeek Abrasion Test double rubs (code to fabric samples)
- (h) Dimensions
- (i) Item location by room number and room name
- (j) Quantity per room
- (k) Total quantity
- (l) Special instructions for procurement ordering and/or installation (if applicable)
- (m) Written Product Description: include a non-proprietary paragraph listing the salient features of the item to include but not limited to:
 - (1) required features and characteristics
 - (2) ergonomic requirements
 - (3) functional requirements
 - (4) testing requirements
 - (5) furniture style
 - (6) construction materials
 - (7) minimum warranty

The following is an example for “m” features and characteristics, ergonomic requirements and functional requirements:

Chair Description:

- (1) Mid-Back Ergonomic Task Chair
- (2) Pneumatic Gaslift; Five Star Base
- (3) Mesh Back; Upholstered Seat
- (4) Height and Width Adjustable Task Arms:
 - a. Arm Height: 6”- 11” (+-1/2”)
 - b. Arm Width: 2”– 4” adjustment
- (5) Height Adjustable Lumbar Support
- (6) Adjustable Seat Height 16”-21” (+- 1”)
- (7) Sliding Seat Depth Adjustment 15”-18” (+-1”)
- (8) Standard Hard Casters (for carpeted areas)
- (9) Overall Measurements:
 - a. Overall width: 25” - 27”
 - b. Overall depth: 25”– 28”

(10) Must have a minimum of the following adjustments (In addition to the above):

- a. 360 Degree Swivel
- b. Knee-Tilt with Tilt Tension
- c. Back angle
- d. Forward Tilt
- e. Forward Tilt and Upright Tilt Lock

For projects with systems furniture, also provide a written description of the following minimum requirements:

- (1) Type furniture systems (panel, stacking panels, spine wall, desk based system, or a combination)
- (2) Minimum noise reduction coefficient (NRC)
- (3) Minimum sound transfer coefficient (STC)
- (4) Minimum flame spread and smoke development
- (5) UL testing for task lighting and electrical system
- (6) Panel widths and heights and their locations (this may be done on the drawings) Worksurface types and sizes (this may be done on the drawings)
- (7) Worksurface edge type
- (8) Varying panel/cover finish materials and locations (locations may be shown on the drawings)
- (9) Storage requirements
- (10) Keyboard requirements
- (11) Lock and keying requirements
- (12) Accessory components (examples: tack boards, marker boards, paper management)
- (13) Electrical and communication raceway requirement; type, capacity and location (base, beltline, below and/or above beltline)
- (14) Locations of communication cables (base, beltline, below and/or above beltline, top channel)
- (15) Types of electrical outlets
- (16) Types of communication jacks; provided and installed by others
- (17) Locations of electrical outlets and communication jacks (this may be done on the drawings)
- (18) Type of cable (examples: Cat. 5, Cat. 6, fiber optic; UTP or STP, etc.) system needs to support; provided and installed by others

1.1.3. Alternate Manufacturer List

Provide a table consisting of major furniture items that lists the manufacturers products specified on the Order Form and two alternate manufacturers. Major furniture items include, but are not limited to, casegoods, furniture systems, seating, and tables. Organize matrix by item code and item name. Supply alternates that are available on GSA Schedule and meet the requirements of the Furniture Order Form. One of the two alternates must be from UNICOR if possible. Provide manufacturer name address, telephone number, product series and product name for each alternate manufacturer.

1.1.4. FF&E Procurement List

Provide a table that lists all FF&E furniture, mission unique equipment and building Contractor Furnished/Contractor Installed (CF/CI) items. Give each item a code and name and designate whether item will be procured as part of the FF&E furniture, mission unique equipment or the building construction contract. Use the item code to key all FF&E documents including location plans, color boards, data sheets, cost estimate, etc.

1.1.5. Points of Contact (POCs)

Provide a comprehensive list of POCs needed to implement the FF&E package. This would include but not be limited to appropriate project team members, using activity contacts, interior design representatives, construction contractors and installers involved in the project. In addition to name, address, phone, fax and email, include each contact's job function. Divide the FF&E package into different sections based on this listing, applies to order forms and cost estimates.

1.1.6. Color Boards

Provide color boards for all finishes and fabrics for all FF&E items. Finishes to be included but not limited to paint, laminate, wood finish, fabric, etc.

1.1.7. Itemized Furniture Cost Estimate

Provide an itemized cost estimate of furnishings keyed to the plans and specifications of products included in the package. This cost estimate should be based on GSA price schedules. The cost estimate must include separate line items for general contingency, installation, electrical hook-up for systems furniture or other furniture requiring hardwiring by a licensed electrician, freight charges and any other related costs. Installation and freight quotes from vendors should be use in lieu of a percentage allowance when available. Include a written statement that the pricing is based on GSA schedules. An estimate developed by a furniture dealership may be provided as support information for the estimate, but must be separate from the contractor provided estimate.

1.2. INTERIOR DESIGN DOCUMENTS

1.2.1. Overall Furniture and Area Plans

Provide floor Plans showing locations and quantities of all freestanding, and workstation furniture proposed for each floor of the building. Key each room to a large scale Furniture Placement Plan showing the furniture configuration, of all furniture. Provide enlarged area plans with a key plan identifying the area in which the building is located. Key all the items on the drawings by furniture item code. Do not provide manufacturer specific information such as product names and numbers on drawings, Drawings shall be non-proprietary. This is typical for FFE on all plans, including those mentioned below.

1.2.2. Workstation Plans

Show each typical workstation configuration in plan view, elevations or isometric view. Drawings shall illustrate panels and all major components for each typical workstation configuration. Identify workstations using the same numbering system as shown on the project drawings. Key components to a legend on each sheet which identifies and describes the components along with dimensions. Provide the plan, elevations and isometric of each typical workstation together on the same drawing sheet.

1.2.3. Panel Plans

Show panel locations and critical dimensions from finished face of walls, columns, panels including clearances and aisle widths. Key panel assemblies to a legend which shall include width, height, configuration of frames, panel fabric and finishes (if there are different selections existing within a project), powered or non-powered panel and wall mount locations.

1.2.4. Desk Plans

Provide typical free standing desk configurations in plan view, elevation or isometric view and identify components to clearly represent each desk configuration.

1.2.5. Reflected Ceiling Plans

Provide typical plans showing ceiling finishes and heights, lighting fixtures, heating ventilation and air conditioning supply and return, and sprinkler head placement for coordination of furniture.

1.2.6. Electrical and Telecommunication Plans

Show power provisions including type and locations of feeder components, activated outlets and other electrical components. Show locations and quantities of outlets for workstations. Clearly identify different outlets, i.e. electrical, LAN and telecommunication receptacles indicating each type proposed. Show wiring configuration, (circuiting, switching, internal and external connections) and provide as applicable.

1.2.7. Artwork Placement Plans

Provide an Artwork Placement Plan to show location of artwork, assign an artwork item code to each piece of artwork. As an alternative, artwork can be located on the Furniture Plans. Provide a schedule that identifies each piece by room name and number. Provide installation instructions; include mounting height.

1.2.8. Window Drapery Plans

Provide Interior Window Drapery Plans. Key each drapery treatment to a schedule showing color, pattern, material, drapery size and type, draw direction, location and quantities.

1.3. FURNITURE SELECTION

1.3.1. Select furniture from the GSA Schedules. Specify furniture available open market when an item is not available on the GSA Schedules. Provide justification for items not available on the GSA Schedules.

1.3.2. To the greatest extent possible when specifying furniture work within a manufacturer's family of furniture for selections, example: Steelcase, Turnstone, Brayton International, Metro, and Vecta are all Steelcase companies. Each alternate should also be specified from a manufacturer's family of furniture, example: first set of alternates would be specified from Knoll's family of furniture and the second from Herman Miller family of furniture. It may be necessary to make some selections from other than a manufacturer's family of furniture if costs are not reasonable for particular items, some items are not available or appropriate for the facility or the items are not on GSA Schedule. If this occurs, consider specifying product from an open line that is accessible by numerous dealerships. Select office furniture including case goods, tables, storage, seating, etc. that is compatible in style, finish and color. Select furniture that complies with ANSI/BIFMA and from manufacturer's standard product line as shown in the most recent published price list and/or amendment and not custom product.

1.4. CONSTRUCTION

1.4.1. Provide knee space at workstations and tables that is not obstructed by panels/legs that interfere with knee space of seated person and provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Provide worksurface tops constructed to prevent warpage. Provide user friendly features such as radius edges. Do not use sharp edges and exposed connections and ensure the underside of desks, tables and worksurfaces are completely and smoothly finished. Provide abutting worksurfaces that mate closely and are of equal heights when used in side-by-side configurations in order to provide a continuous and level worksurface.

1.4.3. Drawers shall stay securely closed when in the closed position and protect wires from damage during drawer operation. Include a safety catch to prevent accidental removal when fully open

1.4.4. Unless otherwise noted, specify lockable desks and workstations and storage of steel construction. Use tempered glass glazing when glazing is required.

1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are allowed in break and lounge areas. Keep placement of furniture systems panel fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufacturers fabric grades and are available through their GSA Schedule. Customers Own Material

(COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.

1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as industrial shelving, workbenches, appliances, fitness equipment, IT equipment and supporting carts. The User will purchase and install mission unique equipment items, unless otherwise noted. Identify locations of known MUE items such as industrial shelving, workbenches, appliances, etc. for space planning purposes.

1.8. SUSTAINABILITY

1.8.1. For all designs provided regardless of facility type, make every effort to implement all aspects of sustainability to the greatest extent possible for all the selections made in the FF&E package. This includes but is not limited to the selection of products that consider: **Material Chemistry and Safety of Inputs** (What chemicals are used in the construction of the selections?); **Recyclability** (Do the selections contain recycled content?); **Disassembly** (Can the selections be disassembled at the end of their useful life to recycle their materials?).

1.8.2. Make selections to the greatest extent possible of products that possess current McDonough Braungart Design Chemistry ([MBDC](#)) certification or other "third-party" certified Cradle to Cradle program, Forest Stewardship Council (FSC) certification, GREENGAURD certification or similar "third-party" certified products consisting of low-emitting materials.

1.9. FURNITURE SYSTEMS

1.9.1. General.

Where appropriate, design furniture systems in open office areas. Coordinate style and color of furniture systems with other storage, seating, etc. in open office areas. Minimize the number of workstation typicals and the parts and pieces required for the design to assist in future reconfiguration and inventorying.

1.9.2. Connector Systems.

Specify a connector system that allows removal of a single panel or spine wall within a typical workstation configuration without requiring disassembly of the workstation or removal of adjacent panels. Specify connector system with tight connections and continuous visual seals. When Acoustical panels are used, provide connector system with continuous acoustical seals. Specify concealed clips, screws, and other construction elements, where possible.

1.9.3. Panels and Spine Walls

Specify panels and spine walls with hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Panels shall be capable of structurally supporting more than 1 fully loaded component per panel per side. Raceways are to be an integral part of the panel and must be able to support lay-in cabling and have a large capacity for electrical and IT. Do not thread cables through the frame.

1.9.4. Electrical And Information/Technology (IT)

Design furniture with electrical systems that meets requirements of UL 1286 when powered panels are required and UL approved task lights that meet requirements of NFPA 70. Dependent on user requirements and Section 01 10 00, paragraph 3 requirements, it is recommended that workstation electrical and IT wiring entry come from the building walls to eliminate the use of power poles and access at the floor. Design electrical and IT systems that are easily accessed in the spine wall and panels without having to move return panels and components. Electrical and IT management will be easily accessible by removable wall covers which can be removed while workstation components are still attached. Specify connector system that has continuation of electrical and IT wiring within workstations and workstation to workstation.

1.9.5. Pedestals

Specify pedestals that are interchangeable from left to right, and right to left, and retain pedestal locking system capability.

1.10. EXECUTIVE FURNITURE

1.10.1. Design for executive furniture in command areas, coordinate specific locations with Corps of Engineers Interior Designer. Use upgraded furniture, upholsteries and finishes in command suites. This includes but is not limited to wood casegoods, seating and tables. Select executive furniture casegoods from a single manufacturer and style line, to include workstations, credenzas, filing, and storage, etc.

1.10.2. Specify furniture with wood veneer finish (except worksurfaces) with mitered solid wood edge of same wood type. Provide worksurface plastic laminate that closely matches adjacent wood veneer. Other executive office furniture such as seating, tables, executive conference room furniture, etc. shall be compatible in style, finish and color with executive furniture casegoods.

1.11. SEATING

1.11.1. General

Specify appropriate chair casters and glides for the floor finish where the seating is located. Universal casters that are appropriate for both hard surface flooring and carpet are preferred. All seating shall support up to a minimum of 250 lbs.

1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, non-upholstered adjustable arms, waterfall front, swivel, tilt, variable back lock, adjustable back height or adjustable lumbar support, pneumatic seat height adjustment, and padded, contoured upholstered seat and back. Desk and guest chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Depending on scale of desk chair provide seat pan forward and back adjustment to increase or decrease depth of seat pan. All desk chairs shall have an adjustable seat height range of 4 1/2", range to include 16 1/2"-20". Select guest chairs that are compatible in style, finish and color with the desk chairs.

1.11.3. Conference Room Seating

At tables, select ergonomic conference seating with casters, non-upholstered arms, waterfall front, swivel, tilt, pneumatic seat height adjustment, and padded, contoured seat and back, unless otherwise noted. Select arm height and/or design that allows seating to be moved up closely to the table top. Conference chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Perimeter conference chairs shall be compatible in style, finish and color with conference seating at the tables.

1.11.4. Lounge, Waiting and Reception Area Seating

Select seating with arms and cushioned, upholstered seat and back. In heavy use areas, arms shall be easily cleaned such as non-upholstered arms or upholstered arms with wood arm caps unless otherwise noted.

1.11.5. Break Room Seating

Select stackable seating that is easily cleaned. Seating shall be appropriate for table and counter heights as applicable with non-upholstered arms if arms are required. Chairs shall have metal legs and composite materials for seats.

1.11.6. Lounge, Waiting and Reception Furniture.

Design for end and coffee tables with plastic laminate tops that are compatible in style finish and color with the seating.

1.12. FILING AND STORAGE.

Select storage and shelving units that meet customer's functional load requirements for stored items. Specify counterweights for filing cabinets when required by the manufacturer for stability. File drawers shall allow only one drawer to be opened at a time. Provide heavy duty storage and shelving if information is not available.

1.13. TRAINING TABLES.

Don't use plastic laminate self edge. Training tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or casters as necessary. Specify dollies if required.

1.14. FURNITURE WARRANTIES.

Specify manufacturer's performance guarantees or warranties that include parts, labor and transportation as follows:

Furniture System, unless otherwise noted – 10 year minimum
Furniture System Task Lights – 2 year minimum, excluding bulbs
Furniture System Fabric – 3 year minimum
Desks - 10 year minimum
Seating, unless otherwise noted - 10 year minimum
Seating Mechanisms and Pneumatic Cylinders - 10 years
Fabric - 3 years minimum
Filing and Storage - 10 year minimum
Tables, unless otherwise noted - 10 year minimum
Table Mechanisms – 5 year
Table Ganging Device - 1 year
Items not listed above - 1 year minimum

ATTACHMENT C

TRACKING COMMENTS IN DRCHECKS

1.0 General

The Government and DB Contractor shall set up the project in Dr Checks. Throughout the design process, the parties shall enter, track, and back-check comments using the DrChecks system. Government reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate exactly what action will be taken or why the action is not required. Comments considered critical by the conference participants shall be flagged as such.

2.0 DrChecks Review Comments

The Contractor and the Government shall monitor DrChecks to assure all comments are annotated and agreed to by the designers and reviewers prior to the next submittal. The DrChecks comments and responses shall be printed and included in the design analysis for record.

2.1. Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

2.2. The Designers of Record shall answer each comment in DrChecks with a formal response prior to the next submittal, clearly indicating what action will be taken and what drawing/spec will change. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next design conference, reviewers will back-check answers to the comments against the submittal, in addition to reviewing additional design work.

2.3. Comments that, in the DB Contractor's opinion, require effort outside the scope of the contract shall be clearly indicated as such in DrChecks. The DB Contractor shall not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3.0 DrChecks Initial Account Set-Up

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at <http://www.projnet.org> and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

3.1. Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4.0 DrChecks Reviewer Role

The Contractor is the technical reviewer and the Government is the compliance reviewer of the DB designers design documents. Each reviewer enters their own comments into the Dr Checks system. To enter comments:

4.1. Log into DrChecks.

4.2. Click on the appropriate project.

4.3. Click on the appropriate review conference. An Add comment screen will appear.

4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.

4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.

4.6. Once comments are all entered, exit DrChecks by choosing “My Account” and then Logout.

5.0 DrChecks Comment Evaluation

The role of the designers of record is to evaluate and respond to the comments entered by the Government reviewers and by the DB Contractor. To respond to comments:

5.1. Log into DrChecks.

5.2. Click on the appropriate project.

5.3. Under “Evaluate” click on the number under “Pending”.

5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)

5.5. Select the appropriate evaluation (concur, non-concur, for information only, or check and resolve) and add the response.

5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.

5.7. Once evaluations are all entered, exit DrChecks by choosing “My Account” and then Logout.

6.0 DrChecks Back-check

At the following design conference, participants will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and completed. The Contractor and Government reviewers shall either enter additional back-check comments, as necessary or close those that are resolved as a result of the design conferences:

6.1. Log into DrChecks.

6.2. Click on the appropriate project.

6.3. Under “My Backcheck” click on the number under “Pending”.

6.4. If you agree with the designer's response select “Close Comment” and add a closing response if desired.

6.5. If you do not agree with the designer's response or the submittal does not reflect the response given, select “Issue Open”, enter additional information.

6.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.

6.7. Once back-checks are all entered, exit DrChecks by choosing “My Account” and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

ATTACHMENT D
SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

Instructions: Use the information outlined in this document to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be "not applicable".

1.0 SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

- 1.1. Project Name (insert name and location)
- 1.2. Applicable Codes and Standards
 - 1.2.1. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities
 - 1.2.2. International Building Code (IBC) for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.
 - 1.2.3. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.
 - 1.2.4. ADA and ABA Accessiblity Guidelines. For Buildings and Facilities See Section 01 10 00, Paragraph 3 for facility specific criteria.
- 1.3. Occupancy Classification
IBC chapters 3 and 4
- 1.4. Construction Type
IBC chapter 6
- 1.5. Area Limitations
IBC chapter 5, table 503
- 1.6. Allowable Floor Areas
IBC section 503, 505
- 1.7. Allowable area increases
IBC section 506, 507
- 1.8. Maximum Height of Buildings
IBC section 504
- 1.9. Fire-resistive substitution
- 1.10. Occupancy Separations
IBC table 302.3.2
- 1.11. Fire Resistive Requirements
 - 1.11.1. Exterior Walls - [] hour rating, IBC table 601, 602
 - 1.11.2. Interior Bearing walls - [] hour rating
 - 1.11.3. Structural frame - [] hour rating
 - 1.11.4. Permanent partitions - [] hour rating

- 1.11.5. Shaft enclosures - [] hour rating
- 1.11.6. Floors & Floor-Ceilings - [] hour rating
- 1.11.7. Roofs and Roof Ceilings - [] hour rating
- 1.12. Automatic Sprinklers and others used to determine the need for automatic Extinguishing Equipment, Extinguishing Systems, Foam Systems, Standpipe
 - 1.12.1. UFC 3-600-01, chapters 4 and 6 systems, wet chemical systems, etc. State which systems are required and to what criteria they will be designed.
 - 1.12.2. UFC 3-600-01, Appendix B Occupancy Classification. Note the classification for each room. This may be accomplished by classifying the entire building and noting exceptions for rooms that differ (E.g. The entire building is Light Hazard except boiler room and storage rooms which are [], etc.)
 - 1.12.3. UFC 3-600-01, Chapter 3 Sprinkler Design Density, Sprinkler Design Area, Water Demand for Hose Streams (supply pressure and source requirements).
 - 1.12.4. UFC 3-600-01, Chapter 4 Coverage per sprinkler head. Extended coverage sprinkler heads are not permitted.
 - 1.12.5. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow. Based on this data and the estimated flow and pressure required for the sprinkler system, determine the need for a fire pump.
 - 1.12.6. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.
- 1.13. Kitchen Cooking Exhaust Equipment
Describe when kitchen cooking exhaust equipment is provided for the project. Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.
- 1.14. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10
- 1.15. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations
 - 1.15.1. IBC Section 712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [] hour rating. IBC Table 302.1.1
 - 1.15.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives
- 1.16. Fire Dampers. Describe where fire dampers and smoke dampers are to be used (IBC Section 716 and NFPA 90A). State whether isolation smoke dampers are required at the air handler.
- 1.17. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72
- 1.18. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system. State whether the visible notification appliances will be combined with the fire alarm system or kept separate. (Note: Navy has taken position to combine visible notification appliances with fire alarm).
- 1.19. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4
- 1.20. Means of Egress

- 1.20.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3
- 1.20.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.
- 1.20.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3
- 1.20.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.
- 1.20.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.
- 1.20.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4
- 1.20.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.
- 1.20.8. Discharge from Exits, NFPA101.7.7.2
- 1.20.9. Illumination of Means of Egress, NFPA101.7.8
- 1.20.10. Emergency Lighting, NFPA101.7.9
- 1.20.11. Marking of Means of Egress, NFPA101.7.10
- 1.21. Elevators, UFC 3-600-01, Chapter 6; IBC and ASME A17.1 - 2000,(Safety Code for Elevators and Escalators)
- 1.22. Accessibility Requirements, ADA and ABA Accessibility Guidelines for Buildings and Facilities
- 1.23. Certification of Fire Protection and Life Safety Code Requirements. (Note: Edit the Fire team membership if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features for this project in accordance with the attached completed form(s).
- 1.24. Designer of Record. Certification of Fire protection and Life Safety Code Requirements. (Note: Edit the Fire team members if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features of this project.

Fire Protection Engineer of Record:

Signature and Stamp

Date

OR

Architect of Record:

Signature and Stamp

Date

Mechanical Engineer of Record:

Signature and Stamp

Date

Electrical Engineer of Record:

Signature/Date

ATTACHMENT E
LEED SUBMITTALS

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)	Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
GENERAL						
		GENERAL - All calculations shall be in accordance with LEED 2009 Reference Guide.				
		GENERAL: Obtain excel version of this spreadsheet at http://en.sas.usace.army.mil/enWeb/EngineeringCriteria .				
		GENERAL - For all credits, narrative/comments may be added to describe special circumstances or considerations regarding the project's credit approach.				
		GENERAL - Include all required LEED drawings indicated below in contract drawings with applicable discipline drawings, labeled For Reference Only.				
		NOTE: Each submittal indicated with "****" differs from LEED certified project submittals by either having a different due date or being an added submittal not required by GBCI.				
		NOTE: Projects seeking LEED certification need only submit to GBCI whatever documentation is acceptable to GBCI (for example, licensed professional certifications). This checklist identifies what must be submitted to the Government for internal review purposes. Government review of LEED documentation in no way supercedes or modifies the requirements and rulings of GBCI for purposes of compliance with project requirement to obtain LEED certification.				
		GENERAL - Audit documentation may include but is not limited to what is indicated in this table.				
			Closeout	List of all Final Design submittals revised after final design to reflect actual closeout conditions. Revised Final Design submittals. - OR - Statement confirming that no changes have been made since final design that effect final design submittal documents.		Proj Engr (PE)
CATEGORY 1 - SUSTAINABLE SITES						
SSPR1		Construction Activity Pollution Prevention (PREREQUISITE)	**Final Design	List of drawings and specifications that address the erosion control, particulate/dust control and sedimentation control measures to be implemented.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design	Narrative that indicates which compliance path was used (NPDES or Local standards) and describes the measures to be implemented on the project. If a local standard was followed, provide specific information to demonstrate that the local standard is equal to or more stringent than the NPDES program.		CIV
SS1		Site Selection	Final Design	Statement confirming that project does not meet any of the prohibited criteria.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	LEED Site plan drawing that shows all proposed development, line depicting boundary of all bodies of water and/or wetlands within 100 feet of project boundary and a line depicting 5' elevation above 100 year flood line that falls within project boundary. Not required if neither condition applies.		CIV
SS2		Development Density & Community Connectivity	Final Design	Option 1: LEED Site vicinity plan showing project site and surrounding development. Show density boundary or note drawing scale.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Table indicating, for project site and all surrounding sites within density radius (keyed to site vicinity plan), site area and building area. Project development density calculation. Density radius calculation. Development density calculation within density radius.		CIV
			Final Design	Option 2: LEED Site vicinity plan showing project site, the 1/2 mile community radius, pedestrian walkways and the locations of the residential development(s) and Basic Services surrounding the project site.		CIV
			Final Design	Option 2: List (including business name and type) of all Basic Services facilities within the 1/2 mile radius, keyed to site vicinity plan.		CIV
SS3		Brownfield Redevelopment	Final Design	Narrative describing contamination and the remediation activities included in project. Include statement indicating how site was determined to be a brownfield.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS4.1		Alternative Transportation: Public Transportation Access	Final Design	Statement indicating which option for compliance applies. State whether public transportation is existing or proposed and, if proposed, cite source of this information.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: LEED Site vicinity plan showing project site, mass transit stops and pedestrian path to them with path distance noted.		CIV
			Final Design	Option 2: LEED Site vicinity plan showing project site, bus stops and pedestrian path to them with path distance noted.		CIV
SS4.2		Alternative Transportation: Bicycle Storage & Changing Rooms	Final Design	FTE calculation. Bicycle storage spaces calculation. Shower/changing facilities calculation.		CIV
			Final Design	List of drawings that show the location(s) of bicycle storage areas. Statement indicating distance from building entrance.		CIV
			Final Design	List of drawings that show the location(s) of shower/changing facilities and, if located outside the building, statement indicating distance from building entrance.		CIV

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PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
SS4.3		Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	Final Design	Statement indicating which option for compliance applies. FTE calculation. Statement indicating total parking capacity of site.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Low-emission & fuel-efficient vehicle calculation.		CIV
			Final Design	Option 1: List of drawings and specification references that show location and number of preferred parking spaces for low-emission & fuel-efficient vehicles and signage.		CIV
			Final Design	Option 1: Statement indicating quantity, make, model and manufacturer of low-emission & fuel-efficient vehicles to be provided. Statement confirming vehicles are zero-emission or indicating ACEEE vehicle scores.		CIV
			Final Design	Option 2: Low-emission & fuel-efficient vehicle parking calculation.		CIV
			Final Design	Option 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design	Option 3: Low-emission & fuel-efficient vehicle refueling station calculation.		CIV
			Final Design	Option 3: List of drawings and specifications indicating location and number of refueling stations, fuel type and fueling capacity for each station for an 8-hour period.		CIV
			Closeout	Option 3: Construction product submittals indicating what was provided and confirming compliance with respect to fuel type and fueling capacity for each station for an 8-hour period.		CIV
SS4.4		Alternative Transportation: Parking Capacity	Final Design	Statement indicating which option for compliance applies.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Preferred parking calculation including number of spaces required, total provided, preferred spaces provided and percentage.		CIV
			Final Design	Option 2: FTE calculation. Preferred parking calculation including number of spaces provided, preferred spaces provided and percentage.		CIV
			Final Design	Options 1 and 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design	Option 3: Narrative indicating number of spaces required and provided and describing infrastructure and support programs with description of project features to support them.		CIV
SS5.1		Site Development: Protect or Restore Habitat	**Final Design	Option 1: List of drawing and specification references that convey site disturbance limits.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design	Option 2: LEED site plan drawing that delineates boundaries of each preserved and restored habitat area with area (sf) noted for each.		CIV
			**Final Design	Option 2: Percentage calculation of restored/preserved habitat to total site area. List of drawings and specification references that convey restoration planting requirements.		CIV
SS5.2		Site Development: Maximize Open Space	Final Design	Option 2: LEED site plan drawing delineating boundary of vegetated open space adjacent to building with areas of building footprint and designated open space noted.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS6.1		Stormwater Design: Quantity Control	Final Design	Statement indicating which option for compliance applies.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Option 1: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf) -OR - Narrative describing site conditions, measures and controls to be implemented to prevent excessive stream velocities and erosion.		CIV
			Final Design	Option 2: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf). Indicate percent reduction in each.		CIV
SS6.2		Stormwater Design: Quality Control	Final Design	For non-structural controls, list all BMPs used and, for each, describe the function of the BMP and indicate the percent annual rainfall treated. List all structural controls and, for each, describe the pollutant removal and indicate the percent annual rainfall treated.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS7.1		Heat Island Effect: Non-Roof	**Final Design	LEED site plan drawing indicating locations and quantities of each paving type, including areas of shaded pavement. Percentage calculation indicating percentage of reflective/shaded/open grid area.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV

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PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
SS7.2		Heat Island Effect: Roof	Final Design	Option 1: Percentage calculation indicating percentage of SRI compliant roof area. List of drawings and specification references that convey SRI requirements and roof slopes.		ARC
			Final Design	Option 1: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout	Option 1: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X Option 1: Manufacturer published product data or certification confirming SRI		PE
			Final Design	Option 2: Percentage calculation indicating percentage of vegetated roof area.		ARC
			Final Design	Option 3: Combined reflective and green roof calculation.		ARC
			Final Design	Option 3: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout	Option 3: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X Option 3: Manufacturer published product data or certification confirming SRI		PE
SS8		Light Pollution Reduction	Final Design	Interior Lighting: List of drawings and specification references that convey interior lighting requirements (location and type of all installed interior lighting, location of non-opaque exterior envelope surfaces, allowing confirmation that maximum candela value from interior fixtures does not intersect non-opaque building envelope surfaces). - OR - List of drawings and specification references that show automatic lighting controls compliance with credit requirement.		ELEC
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		ELEC
			Final Design	Exterior Lighting: List of drawings and specification references that convey exterior lighting requirements (location and type of all site lighting and building façade/landscape lighting).		ELEC
			Final Design	Exterior Site Lighting Power Density (LPD): Tabulation for exterior site lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all site lighting.		ELEC
			Final Design	Exterior Building Facade/Landscape Lighting Power Density (LPD): Tabulation for exterior building facade/landscape lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all building facade/landscape lighting.		ELEC
			Final Design	Exterior Lighting IESNA Zone: Indicate which IESNA zone is applicable to the project.		ELEC
			Final Design	Exterior Lighting Site Lumen table indicating, for each fixture type, quantity installed, initial lamp lumens per luminaire, initial lamp lumens above 90 degrees from Nadir, total lamp lumens and total lamp lumens above 90 degrees. Percentage of site lamp lumens above 90 degrees from nadir to total lamp lumens.		ELEC
			Final Design	Exterior Lighting Narrative describing analysis used for addressing requirements for light trespass at site boundary and beyond.		ELEC
CATEGORY 2 – WATER EFFICIENCY						
WEPR1		Water Use Reduction: 20% Reduction	Final Design	Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design	Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design	Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC

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PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
			Final Design	Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design	Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Closeout	X Manufacturer published product data or certification confirming fixture water usage.		PE
WE1.1		Water Efficient Landscaping: Reduce by 50%	Final Design	Statement indicating which option for compliance applies.		CIV
			**Final Design	Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	Calculation indicating, for baseline and design case, total water applied, total potable water applied, total non-potable water applied. Design case percent potable water reduction. If nonpotable water is used, indicate source of nonpotable water.		CIV
			Final Design	List of landscape plan drawings.		CIV
			Final Design	Narrative describing landscaping and irrigation design strategies, including water use calculation methodology used to determine savings and, if non-potable water is used, specific information about source and available quantity.		CIV
WE1.2		Water Efficient Landscaping: No Potable Water Use or No Irrigation	Same as WE1.1	Same as WE1.1		CIV
WE2		Innovative Wastewater Technologies	Final Design	Statement confirming which option for compliance applies.		MEC
			Final Design	Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design	Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design	Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC
			Final Design	Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design	Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Final Design	Option 1: If onsite non-potable water is used, identify source(s), indicate annual quantity from each source and indicate total annual quantity from all onsite non-potable water sources.		MEC
			Final Design	Option 1: Summary calculation indicating baseline annual water consumption, design case annual water consumption, non-potable annual water consumption and total percentage annual water savings.		MEC
			Final Design	Option 2: Statement confirming on-site treatment of all generated wastewater to tertiary standards and all treated wastewater is either infiltrated or used on-site.		MEC
			Final Design	Option 2: List of drawing and specification references that convey design of on-site wastewater treatment features.		CIV
			Final Design	Option 2: On-site water treatment quantity calculation indicating all on-site wastewater source(s), annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from each source and totals for annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from all sources.		CIV
			Final Design	Option 2: Wastewater summary calculation indicating design case annual flush fixture water usage, annual on-site water treatment and percentage sewage conveyance reduction.		MEC
			Final Design	Narrative describing project strategy for reduction of potable water use for sewage conveyance, including specific information on reclaimed water usage and treated wastewater usage.		MEC
WE3		Water Use Reduction: 30% - 40% Reduction	Same as WEPR1	Same as WEPR1		MEC

CATEGORY 3 – ENERGY AND ATMOSPHERE

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PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
EAPR1		Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	**Final Design	**Owner's Project Requirements document		ALL
			**Final Design	**Basis of Design document for commissioned systems		MEC, ELEC
			**Final Design	**Commissioning Plan		MEC, ELEC
			Closeout	Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout	Commissioning Report		PE
EAPR2		Minimum Energy Performance (PREREQUISITE)	Final Design	Statement listing the mandatory provisions of ASHRAE 90.1 that project meets relative to compliance with this prerequisite and indicating which compliance path was used.		MEC ELEC ARC
			Final Design	Statement indicating which compliance path option applies.		MEC
			Final Design	Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design	Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design	Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design	Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design	Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design	Option 1: Energy type summary listing, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design	Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design	Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design	Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design	Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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PAR		FEATURE	DUE AT	REQUIRED DOCUMENTATION	DATE	REV
			Final Design	Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design	Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EAPR3		Fundamental Refrigerant Management (PREREQUISITE)	Final Design	Statement indicating which option for compliance applies.		MEC
			Final Design	Option 2: Narrative describing phase out plan, including specific information on phase out dates and refrigerant quantities.		MEC
EA1		Optimize Energy Performance	Final Design	Statement indicating which compliance path option applies.		MEC
			Final Design	Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design	Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design	Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design	Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design	Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design	Option 1: Energy type summary listing, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design	Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design	Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design	Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design	Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design	Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design	Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

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			Final Design	Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features	MEC
			Final Design	Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)	MEC
EA2.1		On-Site Renewable Energy	Final Design	Statement indicating which compliance path option applies.	ELEC
			Final Design	List all on-site renewable energy sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost. Indicate total annual energy use (all sources), total annual energy cost (all sources) and percent renewable energy cost.	ELEC MEC
			Final Design	Option 1: Indicate, for renewable energy, proposed design total annual energy generated and annual cost.	ELEC MEC
			Final Design	Option 2: Indicate CBECS building type and building gross area. Provide the following CBECS data: median annual electrical intensity, median annual non-electrical fuel intensity, average electric energy cost, average non-electric fuel cost, annual electric energy use and cost, annual non-electric fuel use and cost.	ELEC MEC
			Final Design	Option 2: Narrative describing renewable systems and explaining calculation method used to estimate annual energy generated, including factors influencing performance.	ELEC MEC
EA2.2		On-Site Renewable Energy	Same as EA2.1	Same as EA2.1	ELEC MEC
EA2.3		On-Site Renewable Energy	Same as EA2.1	Same as EA2.1	ELEC MEC
EA3		Enhanced Commissioning	**Final Design	**Owner's Project Requirements document (OPR)	ALL
			**Final Design	**Basis of Design document for commissioned systems (BOD)	ELEC MEC
			**Final Design	**Commissioning Plan	ELEC MEC
			Closeout	Statement confirming all commissioning requirements have been incorporated into construction documents.	PE
			Closeout	**Commissioning Report	PE
			**Final Design	Statement by CxA confirming Commissioning Design Review	
			Closeout	Statement by CxA confirming review of Contractor submittals for compliance with OPR and BOD	PE
			Closeout	**Systems Manual	PE
			Closeout	Statement by CxA confirming completion of O&M staff and occupant training	PE
			Closeout	**Scope of work for post-occupancy review of building operation, including plan for resolution of outstanding issues	PE
			**Predesign	Statement confirming CxA qualifications and contractual relationships relative to work on this project, demonstrating that CxA is an independent third party.	MEC
EA4		Enhanced Refrigerant Management	Final Design	Refrigerant impact calculation table with all building data and calculation values as shown in LEED 2009 Reference Guide Example Calculations	MEC
			Final Design	Narrative describing any special circumstances or explanatory remarks	
			Closeout	X Cut sheets highlighting refrigerant data for all HVAC components.	PE
EA5		Measurement & Verification	Closeout	Statement indicating which compliance path option applies.	PE
			Closeout	Measurement and Verification Plan including Corrective Action Plan	PE
			Closeout	**Scope of work for post-occupancy implementation of M&V plan including corrective action plan.	PE
EA6		Green Power	Closeout	Statement indicating which compliance path option applies.	PE
			Closeout	Option 1: Indicate proposed design total annual electric energy usage	PE
			Closeout	Option 2: Indicate actual total annual electric energy usage	PE
			Closeout	Option 3: Calculation indicating building type, total gross area, median electrical intensity and annual electric energy use	PE

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			Closeout	Green power provider summary table indicating, for each purchase type, provider name, annual quantity green power purchased and contract term. Indicate total annual green power use and indicate percent green power		PE
			Closeout	Narrative describing how Green Power or Green Tags are purchased		PE
CATEGORY 4 – MATERIALS AND RESOURCES						
MRPR1		Storage & Collection of Recyclables (PREREQUISITE)	Final Design	Statement confirming that recycling area will accommodate recycling of plastic, metal, paper, cardboard and glass. Narrative indicating any other materials addressed and coordination with pickup.		ARC
MR1.1		Building Reuse: Maintain 55% of Existing Walls, Floors & Roof	**Final Design	If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design	Spreadsheet listing, for each building structural/envelope element, the existing area and reused area. Total percent reused.		ARC
MR1.2		Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	Same as MR1.1	Same as MR1.1		ARC
MR1.3		Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	Same as MR1.1	Same as MR1.1		ARC
MR1.4		Building Reuse: Maintain 50% of Interior Non-Structural Elements	**Final Design	If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design	Spreadsheet listing, for each building interior non-structural element, the existing area and reused area. Total percent reused.		ARC
MR2.1		Construction Waste Management: Divert 50% From Disposal	**Preconstruction	Waste Management Plan		PE
			**Construction Quarterly and Closeout	Spreadsheet calculations indicating material description, disposal/diversion location (or recycling hauler), weight, total waste generated, total waste diverted, diversion percentage		PE
			**Construction Quarterly and Closeout	Receipts/tickets for all items on spreadsheet		PE
MR2.2		Construction Waste Management: Divert 75% From Disposal	Same as MR2.1	Same as MR2.1		PE
MR3.1		Materials Reuse: 5%	Closeout	Statement indicating total materials value and whether default or actual.		PE
			Closeout	Spreadsheet calculations indicating, for each reused/salvaged material, material description, source or vendor, cost. Total reused/salvaged materials percentage.		PE
MR3.2		Materials Reuse: 10%	Same as MR3.1	Same as MR3.1		PE
MR4.1		Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Closeout	Statement indicating total materials value and whether default or actual.		PE
			Closeout	Spreadsheet calculations indicating, for each recycled content material, material name/description, manufacturer, cost, post-consumer recycled content percent, pre-consumer recycled content percent, source of recycled content data. Total post-consumer content materials cost, total pre-consumer content materials cost, total combined recycled content materials cost, recycled content materials percentage.		PE
			Final Design or NLT Preconstruction	**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	Manufacturer published product data or certification, confirming recycled content percentages in spreadsheet		PE
MR4.2		Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Same as MR4.1	Same as MR4.1		PE
MR5.1		Regional Materials: 10% Extracted, Processed & Manufactured Regionally	Closeout	Statement indicating total materials value and whether default or actual.		PE
			Closeout	Spreadsheet calculations indicating, for each regional material, material name/description, manufacturer, cost, percent compliant, harvest distance, manufacture distance, source of manufacture and harvest location data. Total regional materials cost, regional materials percentage.		PE
			Preconstruction	**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	Manufacturer published product data or certification confirming regional material percentages in spreadsheet		PE

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MR5.2		Regional Materials:20% Extracted, Processed & Manufactured Regionally	Same as MR5.1		Same as MR5.1		PE	
MR6		Rapidly Renewable Materials	Closeout		Statement indicating total materials value and whether default or actual.		PE	
			Closeout		Spreadsheet calculations indicating, for each rapidly renewable material, material name/description, manufacturer, cost, rapidly renewable content percent, rapidly renewable product value. Total rapidly renewable product value, rapidly renewable materials percentage.		PE	
			Final Design		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		ARC	
			Closeout	X	Manufacturer published product data or certification confirming rapidly renewable material percentages in spreadsheet		PE	
MR7		Certified Wood	Closeout		Statement indicating total materials value and whether default or actual.		PE	
			Closeout		Spreadsheet calculations indicating, for each certified wood material, material name/description, vendor, cost, wood component percent, certified wood percent of wood component, FSC chain of custody certificate number. Total certified wood product value, certified wood materials percentage.		PE	
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE	
			Closeout	X	Vendor invoices, FSC chain of custody certificates and anufacturer published product data or certification confirming all certified wood materials percentages in spreadsheet.		PE	
INDOOR ENVIRONMENTAL QUALITY								
EQPR1		Minimum IAQ Performance (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		MEC	
			Final Design		Narrative describing the project's ventilation design, including specifics about fresh air intake volumes and special considerations.		MEC	
EQPR2		Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		ARC	
			Final Design		List of drawing and specification references that convey conformance to applicable requirements (signage, exhaust system, room separation details, etc).		ARC	
EQ1		Outdoor Air Delivery Monitoring	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC	
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC	
			Final Design		Narrative describing the project's ventilation design and CO2 monitoring system, including specifics about monitors, operational parameters and setpoints.		MEC	
			Closeout	X	Cut sheets for CO2 monitoring system.		PE	
EQ2		Increased Ventilation	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC	
			Final Design		Narrative describing the project's ventilation design, including specifics about zone fresh air intake volumes and demonstrating compliance.		MEC	
			Final Design		Option 2: Narrative describing design method used for determining natural ventilation design, including calculation methodology/model results and demonstrating compliance.		MEC	
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC	
EQ3.1		Construction IAQ Management Plan: During Construction	**Preconstruction		Construction IAQ Management Plan		PE	
			Closeout		Statement confirming whether air handling units were operated during construction		PE	
			Closeout		Dated jobsite photos showing examples of IAQ management plan practices being implemented. Label photos to indicate which practice they demonstrate. Minimum one photo of each practice at each building.		PE	

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			Closeout	Spreadsheet indicating, for each filter installed during construction, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy.		PE
EQ3.2		Construction IAQ Management Plan: Before Occupancy	**Preconstruction	Construction IAQ Management Plan		PE
			Closeout	Statement indicating which option for compliance applies and confirming that required activities have occurred that meet the applicable requirements.		PE
			Closeout	Option 1a: Narrative describing the project's flushout process, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout	Option 1b: Narrative describing the project's pre-occupancy and post-occupancy flushout processes, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout	Option 2: Narrative describing the project's IAQ testing process, including specifics about contaminants tested for, locations, remaining work at time of test, retest parameters and special considerations (if any).		PE
			Closeout	Option 2: IAQ testing report demonstrating compliance.		PE
EQ4.1		Low Emitting Materials: Adhesives & Sealants	Closeout	Spreadsheet indicating, for each applicable indoor adhesive, sealant and sealant primer used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout	Spreadsheet indicating, for each applicable indoor aerosol adhesive, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor aerosol adhesives were used for the project.		PE
			Closeout	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.2		Low Emitting Materials: Paints & Coatings	Closeout	Spreadsheet indicating, for each applicable indoor paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout	Spreadsheet indicating, for each applicable indoor anti-corrosive/anti-rust paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor anti-corrosive/anti-rust paints were used for the project.		PE
			Closeout	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.3		Low Emitting Materials: Flooring Systems	Closeout	Spreadsheet indicating, for each indoor flooring system used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data.		PE
			Closeout	Spreadsheet indicating, for each indoor carpet cushion used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data - OR - Statement confirming no indoor carpet cushion was used for the project.		PE
			Closeout	Manufacturer published product data or certification confirming material compliance label in spreadsheet		PE
EQ4.4		Low Emitting Materials: Composite Wood & Agrifiber Products	Closeout	Spreadsheet indicating, for each indoor composite wood and agrifiber product used, the manufacturer, product name/model number, if it contains added urea formaldehyde (yes/no) and source of LEED compliance data.		PE
			Closeout	Manufacturer published product data or certification confirming material urea formaldehyde in spreadsheet		PE
EQ5		Indoor Chemical & Pollutant Source Control	Closeout	Spreadsheet indicating, for each permanent entryway system used, the manufacturer, product name/model number and description of system.		PE
			Final Design	List of drawing and specification references that convey locations and installation methods for entryway systems.		ARC
			Final Design	Spreadsheet indicating, for each chemical use area, the room number, room name, description of room separation features (walls, floor/ceilings, openings) and pressure differential from surrounding spaces with doors closed - OR - Statement confirming that project includes no chemical use areas and that no hazardous cleaning materials are needed for building maintenance.		ARC MEC
			Final Design	If project includes chemical use areas: List of drawing and specification references that convey locations of chemical use areas, room separation features and exhaust system.		ARC

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			Final Design	If project includes places where water and chemical concentrate mixing occurs: List of drawing and specification references that convey provisions for containment of hazardous liquid wastes OR - Statement confirming that project includes no places where water and chemical concentrate mixing occurs.	ARC MEC
			Closeout	If project includes chemical use areas: Spreadsheet indicating, for AHUs/mechanical ventilation equipment serving occupied areas, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy (yes/no) - OR - Statement confirming that project does not use mechanical equipment for ventilation of occupied areas.	PE
EQ6.1		Controllability of Systems: Lighting	Final Design	Calculation indicating total number of individual workstations, number of workstations with individual lighting controls and the percentage of workstations with individual lighting controls.	ELEC
			Final Design	For each shared multi-occupant space, provide a brief description of lighting controls.	ELEC
			Final Design	Narrative describing lighting control strategy, including type and location of individual controls and type and location of controls in shared multi-occupant spaces.	ELEC
EQ6.2		Controllability of Systems: Thermal Comfort	Final Design	Calculation indicating total number of individual workstations, number of workstations with individual thermal comfort controls and the percentage of workstations with individual thermal comfort controls.	MEC
			Final Design	For each shared multi-occupant space, provide a brief description of thermal comfort controls.	MEC
			Final Design	Narrative describing thermal comfort control strategy, including type and location of individual and shared multi-occupant controls.	MEC
EQ7.1		Thermal Comfort: Design	Final Design	Design criteria spreadsheet indicating, for spring, summer, fall and winter, maximum indoor space design temperature, minimum indoor space design temperature and maximum indoor space design humidity.	MEC
			Final Design	Narrative describing method used to establish thermal comfort control conditions and how systems design addresses the design criteria, including compliance with the referenced standard.	MEC
EQ7.2		Thermal Comfort: Verification	Final Design	Narrative describing the scope of work for the thermal comfort survey, including corrective action plan development	MEC
			Final Design	List of drawing and specification references that convey permanent monitoring system.	MEC
EQ8.1		Daylight & Views: Daylight 75% of Spaces	Final Design	Option 2: Table indicating all regularly occupied spaces with space area and space area with compliant daylight zone. Sum of regularly occupied areas and regularly occupied areas with compliant daylight zone. Percentage calculation of areas with compliant daylight zone to total regularly occupied areas.	ARC
			Final Design	Option 1: Simulation model method, software and output data	ELEC
			Final Design	Option 1: Table indicating all regularly occupied spaces with space area, space area with minimum 25 footcandles daylighting illumination, and method of providing glare control. Sum of regularly occupied areas and regularly occupied areas with 25 fc daylighting. Percentage calculation of areas with 25 fc daylighting to total regularly occupied areas.	ELEC
			Final Design	For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.	ARC
			Final Design	List of drawing and specification references that convey exterior glazed opening head and sill heights, glazing performance properties and glare control/sunlight redirection devices.	ARC
			Closeout	Manufacturer published product data or certification confirming glazing Tvis in spreadsheet	PE
EQ8.2		Daylight & Views: Views for 90% of Spaces	Final Design	Table indicating all regularly occupied spaces with space area and space area with access to views. Sum of regularly occupied areas and regularly occupied areas with access to views. Percentage calculation of areas with views to total regularly occupied areas.	ARC
			Final Design	For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.	ARC
			Final Design	LEED Floor plan drawings showing line of sight diagramming of views areas in each regularly occupied space. List of drawing/specification references that convey exterior glazed opening head and sill heights.	ARC

INNOVATION & DESIGN PROCESS

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IDc1.1		Innovation in Design	Final Design		Narrative describing intent, requirement for credit, project approach to the credit. List of drawings and specification references that convey implementation of credit. All other documentation that validates claimed credit.		
IDc1.2		Innovation in Design	Final Design				
IDc1.3		Innovation in Design	Final Design				
IDc1.4		Innovation in Design	Final Design				
IDc2		LEED Accredited Professional	Final Design		Narrative indicating name of LEED AP, company name of LEED AP, description of LEED AP's role and responsibilities in the project.		ARC

ATTACHMENT F
Version 02-03-2010

BUILDING INFORMATION MODELING REQUIREMENTS

1.0 Section 1 - Submittal Format

1.1. Design Deliverables. Develop all designs using Building Information Modeling (BIM) and Computer Aided Design (CAD) software. Design submittal drawings shall be [Not Supplied - SubmittalReqDistribution : FULL_SIZE] size, suitable for half-size scaled reproduction.

2.0 Section 2 – Design Requirements

2.1. BIM Model and Facility Data. Contractor shall use BIM application(s) and software(s) to develop project designs. "Facility Data" is defined as associated intelligent attribute data. The "Model" is defined as 3D graphics that includes Facility Data and output as described in the paragraph 'Output' below. Contractors will use the Model to produce accurate Construction Documents. For each Center of Standardization (CoS) facility type included in this project, all BIM Models and associated Facility Data shall be submitted in Bentley Systems BIM [Not Supplied - SubmittalReqCADDSystem : BENTLEY_VERSION] with associated USACE Bentley BIM Workspace (which includes specific standard BIM libraries and definitions). This Workspace can be downloaded from the CAD/BIM Technology Center. [Where available, the workspace will be specific to this CoS Facility Standard Design. The Contractor will be provided a baseline multi-discipline BIM Project Model for the CoS Facility Standard Design type, where such a model exists (for the purposes of site adaptation).] The USACE Bentley BIM Workspace is dependent on specific versions of the Bentley BIM suite of products and only the versions of the software that are listed in the Contractor instructions included with the USACE BIM Workspace are permitted to be used.

2.1.1. Reference. Refer to ERDC TR-06-10, "U.S. Army Corps of Engineers Building Information Modeling Road Map" from the CAD/BIM Technology Center website for more information on the USACE BIM implementation goals.

2.2. Drawings. Deliver CAD files used for the creation of the Construction Documents Drawings per requirements in Section 01 33 16, the criteria of the USACE [Not Supplied - DistrictInfoGeneral : ISSUING_DISTRICT] District, and as noted herein. Specification of a CAD file format for these Drawings does not limit which BIM application(s) or software(s) may be used for project development and execution.

2.2.1. IFC Support. The Contractor's selected BIM application(s) and software(s) must support the IFC (Industry Foundation Class - see www.iai-tech.org). Submit any deviations from or additions to the IFC property sets for any new spaces, systems, and equipment for Government approval.

2.2.2. Submittal Requirements. BIM submittals shall be fully interoperable, compatible, and editable with the Bentley BIM tools. Use the specified version of the USACE Bentley BIM Workspace and conform to the requirements of **Sections 3 and 4 below**.

2.2.3. BIM Project Execution Plan.

2.2.3.1. Develop a BIM Project Execution Plan ("Plan" or "PxP") documenting the BIM and analysis technologies selected for the Project Model (integrated with the AEC CAD Standard) from concept development through As-Builts as a design, production, coordination, construction, and documentation tool and the collaborative process by which it shall be executed. See Section 7 for additional guidance on developing the Plan.

2.2.4. BIM Requirements..

2.2.4.1. Facility Data. Develop the Facility Data consisting of a set of intelligent elements for the Model (e.g., doors, air handlers, electrical panels). This Facility Data shall include all material definitions and attributes that are necessary for the Project facility design and construction. Additional data in support of Section 6 Contractor Electives is encouraged.

2.2.4.2. Model Content. The Model and Facility Data shall include, at a minimum, the requirements of Section 4 below.

2.2.4.3. Model Granularity. Models may vary in level of detail for individual elements within a model, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'0") scaled drawing (e.g. at least 1/16th, 1/8th and 1/4th), or appropriately scaled civil drawings.

2.2.4.4. Output. Submitted CAD drawings (e.g., plans, elevations, sections, schedules, details, etc.) shall be derived (commonly known as extractions, views or sheets) and maintained from the submitted Model and Facility Data.

2.3. Quality Control. Implement quality control (QC) parameters for the Model, including:

2.3.1. Model Standards Checks. QC validation used to ensure that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements. Report non-compliant elements and corrective action plan to correct non-compliant elements. Provide the government with detailed justification and request government approval for any non-compliant element which the contractor proposes to be allowed to remain in the Model.

2.3.2. CAD Standards Checks. QC checking performed to ensure that the fonts, dimensions, line styles, levels and other construction document formatting issues are followed per the A/E/C CADD Standard.

2.3.3. Other Parameters. Develop such other QC parameters as Contractor deems appropriate for the Project and provide to the Government for concurrence.

2.4. Design and Construction Reviews. Perform design and construction reviews at each submittal stage under Section 3 to test the Model, including:

2.4.1. Visual Checks. Checking to ensure the design intent has been followed and that there are no unintended elements in the Model.

2.4.2. Interference Management Checks. Locate conflicting spatial data in the Model where two elements are occupying the same space. Log hard interferences (e.g., mechanical vs. structural or mechanical vs. mechanical overlaps in the same location) and soft interferences, (e.g., conflicts regarding equipment clearance, service access, fireproofing, insulation) in a written report and resolve.

2.4.3. IFC Coordination View. Provide an IFC Coordination View in IFC Express format for all deliverables. Provide exported property set data for all IFC supported named building elements.

2.4.4. Other Parameters. Develop such other Review parameters as the Contractor deems appropriate for the Project and provide to the Government for concurrence..

3.0 Section 3 – Design Stage Submittal Requirements

3.1. General Submittal Requirements.

3.1.1. Provide submittals in compliance with BIM Project Execution Plan deliverables at stages as described hereinafter.

3.1.2. At each Stage in Paragraphs 3.3 through 3.6, provide a Contractor-certified written report confirming that consistency checks as identified in Paragraphs 2.3 and 2.4 have been completed. This report shall be discussed as part of the review process and shall address cross-discipline interferences, if any.

3.1.3. At each Stage in Paragraphs 3.3 through 3.6, provide the Government with:

- The Model, Facility Data, Workspace and CAD Data files in native Bentley BIM/CAD.

- A 3-D interactive review format of the Model in Bentley Navigator, Autodesk Navisworks, Adobe 3D PDF 7.0 (or later), Google Earth KMZ or other format per Plan requirements. The file format for reviews can change between submittals.

- A list of all submitted files. The list should include a description, directory, and file name for each file submitted. For all CAD sheets, include the sheet title and sheet number. Identify files that have been produced from the submitted Model and Facility Data.

3.2. Initial Design Conference Submittal.

3.2.1. Submit a digital copy of the Plan where, in addition to Paragraph 3.1.4, the USACE Geographic District BIM Manager will coordinate with the USACE CoS BIM Manager to confirm acceptability of the Plan or advise as to additional processes or activities necessary to be incorporated.

3.2.2. Within thirty (30) days after the approval of the Plan, conduct a demonstration to review the Plan for clarification, and to verify the functionality of Model technology workflow and processes. If modifications are required, the Contractor shall complete the modifications and resubmit the Plan and perform subsequent demonstration for Government acceptance. There will be no payment for design or construction until the Plan is acceptable to the Government. The Government may also withhold payment for design and construction for unacceptable performance in executing the approved Plan.

3.3. Interim Design Submittals.

3.3.1. BIM and CAD Data. The Model shall include the requirements identified in Paragraph 2.2.4 as applicable to the Interim Design package(s).

3.4. Final Design Submissions and Design Complete Submittals.

3.4.1. BIM and CAD Data. The Model shall include the requirements identified in Paragraph 2.2.4. Acceptance according to Paragraph 3.1.4 is required before commencement of construction, as described in Paragraph 3.7.6 of Section 01 33 16.

3.5. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model, including interference management and design change tracking information.

3.6. Final As-Built BIM and CAD Data Submittal. Submit the final Model, Facility Data, and CAD files reflecting as-built conditions for Government Approval, as specified in Section 01 78 02.00 10, PROJECT CLOSEOUT.

4.0 **Section 4 – BIM Model Minimum Requirements and Output**

4.1. General Provisions. The deliverable Model shall be developed to include the systems described below as they would be built and the processes of installing them, and to reflect final as-built conditions. The deliverable model at the interim design stage and at the final design stage (“released for construction”) shall be developed to include as many of the systems described below as are necessary and appropriate at that design stage.

4.2. Architectural/Interior Design. The Architectural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Additional minimum Model requirements include:

4.2.1. Spaces. The Model shall include spaces defining accurate net square footage and net volume, and holding data for the room finish schedule for including room names and numbers. Include Programmatic Information provided by the Government or validated program to verify design space against programmed space, using this information to validate area quantities.

4.2.2. Walls and Curtain Walls. Each wall shall be depicted to the exact height, length, width and ratings (thermal, acoustic, fire) to properly reflect wall types. The Model shall include all walls, both interior and exterior, and the necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.2.3. Doors, Windows and Louvers. Doors, windows and louvers shall be depicted to represent their actual size, type and location. Doors and windows shall be modeled with the necessary intelligence to produce accurate window and door schedules.

4.2.4. Roof. The Model shall include the roof configuration, drainage system, penetrations, specialties, and the necessary intelligence to produce accurate plans, building sections and generic wall sections where roof design elements are depicted.

4.2.5. Floors. The floor slab shall be developed in the structural Model and then referenced by the architectural Model for each floor of the Project building.

4.2.6. Ceilings. All heights and other dimensions of ceilings, including soffits, ceiling materials, or other special conditions shall be depicted in the Model with the necessary intelligence to produce accurate plans, building sections and generic wall sections where ceiling design elements are depicted.

4.2.7. Vertical Circulation. All continuous vertical components (i.e., non-structural shafts, architectural stairs, handrails and guardrails) shall be accurately depicted and shall include the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.

4.2.8. Architectural Specialties and Woodwork. All architectural specialties (i.e., toilet room accessories, toilet partitions, grab bars, lockers, and display cases) and woodwork (i.e., cabinetry and counters) shall be accurately depicted with the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.

4.2.9. Signage. The Model shall include all signage and the necessary intelligence to produce accurate plans and schedules.

4.2.10. Schedules. Provide door, window, hardware sets using BHMA designations, flooring, wall finish, and signage schedules from the Model, indicating the type, materials and finishes used in the design.

4.3. Furniture. The furniture systems Model may vary in level of detail for individual elements within a Model, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing, and have necessary intelligence to produce accurate plans. Representation of furniture elements is to be 2D. Contractor may provide a minimal number of 3D representations as examples. Examples of furniture include, but are not limited to, desks, furniture systems, seating, tables, and office storage.

4.3.1. Furniture Coordination. Furniture that makes use of electrical, data or other features shall include the necessary intelligence to produce coordinated documents and data.

4.4. Equipment. The Model may vary in level of detail for individual elements within a Model. Equipment shall be depicted to meet layout requirements with the necessary intelligence to produce accurate plans and minimum schedules depicting their configuration. Examples of equipment include but are not limited to copiers, printers, refrigerators, ice machines and microwaves.

4.4.1. Schedules. Provide furniture and equipment schedules from the model indicating the materials, finishes, mechanical, and electrical requirements.

4.5. Structural. The structural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.5.1. Foundations. All necessary foundation and/or footing elements, with necessary intelligence to produce accurate plans and elevations

4.5.2. Floor Slabs. Structural floor slabs shall be depicted, including all necessary recesses, curbs, pads, closure pours, and major penetrations accurately depicted.

4.5.3. Structural Steel. All steel columns, primary and secondary framing members, and steel bracing for the roof and floor systems (including decks), including all necessary intelligence to produce accurate structural steel framing plans and related building/wall sections.

4.5.4. Cast-in-Place Concrete. All walls, columns, and beams, including necessary intelligence to produce accurate plans and building/wall sections depicting cast-in-place concrete elements.

4.5.5. Expansion/Contraction Joints. Joints shall be accurately depicted.

4.5.6. Stairs. The structural Model shall include all necessary openings and framing members for stair systems, including necessary intelligence to produce accurate plans and building/wall sections depicting stair design elements.

4.5.7. Shafts and Pits. The structural Model shall include all necessary shafts, pits, and openings, including necessary intelligence to produce accurate plans and building/wall sections depicting these design elements.

4.6. Mechanical. The mechanical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Small diameter (less than 1-1/2" NPS) field-routed piping is not required in the model. Additional minimum Model requirements include:

4.6.1. HVAC. All necessary heating, ventilating, air-conditioning and specialty equipment, including air distribution ducts for supply, return, and ventilation and exhaust ducts, including control system, registers, diffusers, grills and hydronic baseboards with necessary intelligence to produce accurate plans, elevations, building/wall sections and schedules.

4.6.1.1. Mechanical Piping. All necessary piping and fixture layouts, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, and schedules.

4.6.2. Plumbing. All necessary plumbing piping and fixture layouts, floor and area drains, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules.

4.6.3. Equipment Clearances. All HVAC and Plumbing equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.6.4. Elevator Equipment. The Model shall include the necessary equipment and control system, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.7. Electrical/Telecommunications. The electrical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Small diameter (less than 1-1/2"Ø) field-routed conduit is not required in the model. Additional minimum Model requirements include:

4.7.1. Interior Electrical Power and Lighting. All necessary interior electrical components (i.e., lighting, receptacles, special and general purpose power receptacles, lighting fixtures, panelboards, cable trays and control systems), including necessary intelligence to produce accurate plans, details and schedules. Lighting and power built into furniture/equipment shall be modeled.

4.7.2. Special Electrical Systems. All necessary special electrical components (i.e., security, Mass Notification, Public Address, nurse call and other special occupancies, and control systems), including necessary intelligence to produce accurate plans, details and schedules.

4.7.3. Grounding Systems. Grounding Systems. All necessary grounding components (i.e., lightning protection systems, static grounding systems, communications grounding systems, bonding), including necessary intelligence to produce accurate plans, details and schedules.

4.7.4. Communications. All existing and new communications service controls and connections, both above ground and underground with necessary intelligence to produce accurate plans, details and schedules. Cable tray routing shall be modeled without detail of cable contents.

4.7.5. Exterior Building Lighting. All necessary exterior lighting with necessary intelligence to produce accurate plans, elevations and schedules. The exterior building lighting Model shall include all necessary lighting, relevant existing and proposed support utility lines and equipment required with necessary intelligence to produce accurate plans, details and schedules.

4.7.6. Equipment Clearances. The model shall incorporate and define all electrical and communications working spaces, clearances, and required access

4.8. Fire Protection. The fire protection system Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.8.1. Fire Protection System. All relevant fire protection components (i.e., branch piping, sprinkler heads, fittings, drains, pumps, tanks, sensors, control panels) with necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules. All fire protection piping shall be modeled.

4.8.2. Fire Alarms. Fire alarm/mass notification devices and detection system shall be indicated with necessary intelligence to produce accurate plans depicting them.

4.9. Civil. The civil Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a one inch (1"=100') scaled drawing. Additional minimum Model requirements include:

4.9.1. Terrain (DTM). All relevant site conditions and proposed grading, including necessary intelligence to produce accurate Project site topographical plans and cross sections.

4.9.2. Drainage. All existing and new drainage piping, including upgrades thereto, including necessary intelligence to produce accurate plans and profiles for the Project site.

4.9.3. Storm Water and Sanitary Sewers. All existing and new sewer structures and piping, including upgrades thereto, on the Project site with necessary connections to mains or other distribution points as appropriate, including necessary intelligence to produce accurate plans and profiles for the Project site.

4.9.4. Utilities. All necessary new utilities connections from the Project building(s) to the existing or newly-created utilities, and all existing above ground and underground utility conduits, including necessary intelligence to produce accurate plans and site-sections.

4.9.5. Roads and Parking. All necessary roadways and parking lots or parking structures, including necessary intelligence to produce accurate plans, profiles and cross-sections.

5.0 Section 5 - Ownership and Rights in Data

5.1. Ownership. The Government has ownership of and rights at the date of Closeout Submittal to all CAD files, BIM Model, and Facility Data developed for the Project in accordance with FAR Part 27, clauses incorporated in Section 00 72 00, Contract Clauses and Special Contract Requirement 1.14 GOVERNMENT RE-USE OF DESIGN (Section 00 73 00). The Government may make use of this data following any deliverable.

6.0 Section 6 – Contractor Electives

6.1. Applicable Criteria. If the Contractor elected to include one or more of the following features as an elective in its accepted contract proposal for additional credit during the source selection, as described in the proposal submission requirements and evaluation criteria, the following criteria are requirements, as applicable to those elective feature(s).

6.2. COBIE Compliance. The Model and Facility Data for the Project shall fulfill Construction Operations Building Information Exchange (COBIE) requirements as defined by the Whole Building Design Guide organization, including all requirements for the indexing and submission of Portable Document Format (PDF) and other appropriate file formats that would otherwise be printed and submitted in compliance with Project operations and maintenance handover requirements.

6.3. Project Scheduling using the Model. In the BIM Execution Plan and during the Preliminary BIM Execution Plan Review, provide an overview of the use of BIM in the development and support of the project construction schedule.

6.3.1. Submittal Requirements. During the Submittal stages, the Contractor shall deliver the construction schedule with information derived from the Model.

6.3.1.1. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model for project scheduling.

6.4. Cost Estimating. In the BIM Execution Plan and during the Preliminary BIM Execution Plan Review, provide an overview of the use of BIM in the development and support of cost estimating requirements, or other applications such as cost analysis and estimate validation.

6.4.1. Submittal Requirements. During the Submittal stages, the Contractor shall deliver cost estimating information derived from the Model.

6.4.2. Project completion. At project completion, the Contractor shall provide an MII (Micro Computer Aided Cost Estimating System Generation II) Cost Estimate which follows the USACE Cost Engineering Military Work Breakdown System (WBS), a modified Uniformat, to at least the sub-systems level and uses quantity information supplied directly from BIM output to the maximum extent possible, though other "Gap" quantity information will be included as necessary for a complete and accurate cost estimate.

6.4.2.1. Sub system level extracted quantities from the BIM for use within the estimate shall be provided according to how detailed line items or tasks should be installed/built so that accurate costs can be developed and/or reflected. Therefore, when developing a BIM, the designer shall be cognizant of what tasks need to be separated appropriately at the beginning stages of model development, such as tasks done on the first floor versus the same task on higher floors that will be more labor intensive and therefore need to have a separate quantity and be priced differently. Tasks and their extracted quantities from the BIM shall be broken down by their location (proximity in the structure) as well as the complexity of its installation.

6.4.2.2. At all design stages it shall be understood that BIM output as described in this document will not generate all quantities that are necessary in order to develop a complete and accurate cost estimate of the project based on the design. An example of this would be plumbing that is less than 1.5" diameter and therefore not expected to be modeled due to granularity; this information is commonly referred to as The Gap. Quantities from The Gap and their associated costs shall be included in the final project actual cost estimates as well.

6.5. Other Analyses and Reports. Structural, energy and efficiency, EPACT 2005 & EISA 2007, lighting design, daylighting, electrical power, psychrometric processing, shading, programming, LEED, fire protection, code compliance, Life Cycle Cost, acoustic, plumbing.

7.0 Section 7 – BIM Project Execution Plan Template

7.1. Contractors will utilize the latest version of the USACE BIM PROJECT EXECUTION PLAN (USACE PxP) Template to develop an acceptable Plan. The template can be downloaded from the CAD/BIM Technology Center website.

ATTACHMENT G**DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT**

Organize electronic design submittal files in a subdirectory/file structure in accordance with the following table. The Contractor may suggest a slightly different structure, subject to the discretion of the government.

Design Submittal Directory and Subdirectory File Arrangement.

Directory	Sub-Directory	Sub-Directory or Files	Files
Submittal/Package Name	Narratives	PDF file or files with updated design narrative for each applicable design discipline	
	Drawings	PDF (subdirectory)	Single PDF file with all applicable drawing sheets - bookmarked by sheet number and name
		BIM (subdirectory) See Attachment F.	BIM project folder (with files) per the USACE Workspace. Include an Excel drawing index file with each drawing sheet listed by sheet #, name and corresponding dgn file name (Final Design & Design Complete only)
	Design Analysis & Calculations	Individual PDF files containing design analysis and calculations for each discipline applicable to the submittal	
		PDF file with Fire Protection and Life Safety Code Review checklist	
	LEED	PDF file with updated Leed Check List	
		PDF file or files with LEED Templates for each point with applicable documentation included in each file.	
		LEED SUBMITTALS	
	Energy Analysis	PDF with baseline energy consumption analysis	
		PDF with actual building energy consumption analysis	
	Specifications	Single PDF file with table of contents and all applicable specifications sections.	
		Submittal Register (Final Design & Design Complete submittal only)	
	Design Quality Control	PDF file or files with DQC checklist(s) and/or statements	
	Building Rendering(s)	PDF file of rendering for each building type included in contract (Final Design & Design Complete).	

**SECTION 01 45 01.10
QUALITY CONTROL SYSTEM (QCS)**

1.0 GENERAL

- 1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS
- 1.2. QCS SOFTWARE
- 1.3. SYSTEM REQUIREMENTS
- 1.4. RELATED INFORMATION
- 1.5. CONTRACT DATABASE
- 1.6. DATABASE MAINTENANCE
- 1.7. IMPLEMENTATION
- 1.8. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM
- 1.9. MONTHLY COORDINATION MEETING
- 1.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data
- Request for Information
- Accident Reporting
- Safety Exposure Manhours

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

For ease and speed of communications, both Government and Contractor will exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.2. OTHER FACTORS

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01 32 01.00 10, PROJECT SCHEDULE, Section 01 33 00, SUBMITTAL PROCEDURES, and Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.3. QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.4. SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

(a) Hardware

- IBM-compatible PC with 1000 MHz Pentium or higher processor
- 256 MB RAM for workstation / 512+ MB RAM for server
- 1 GB hard drive disk space for sole use by the QCS system
- Compact disk (CD) Reader, 8x speed or higher
- SVGA or higher resolution monitor (1024 x 768, 256 colors)
- Mouse or other pointing device
- Windows compatible printer (Laser printer must have 4+ MB of RAM)
- Connection to the Internet, minimum 56K BPS

(b) Software

- MS Windows 2000 or higher
- MS Word 2000 or newer
- Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher
- Electronic mail (E-mail), MAPI compatible
- Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.5. RELATED INFORMATION

1.5.1. QCS USER GUIDE

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.5.2. CONTRACTOR QUALITY CONTROL (CQC) TRAINING

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.6. CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by using the government's SFTP repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.7. DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government, e.g., daily reports, submittals, RFI's, schedule updates, payment requests, etc. shall be submitted using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, email or CD-ROM may be used instead (see Paragraph DATA SUBMISSION VIA CD-ROM). The QCS database typically shall include current data on the following items:

1.7.1. ADMINISTRATION

1.7.1.1. Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format.

1.7.1.2. Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format.

1.7.1.3. Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main)

office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

All Requests For Information (RFI) shall be exchanged using the Built-in RFI generator and tracker in QCS.

1.7.1.4. Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5. Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.7.2. FINANCES

1.7.2.1. Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the design and construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.7.2.2. Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet prompt payment certification, and payment invoice in QCS. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment request, prompt payment certification, and payment invoice with supporting data by using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, E-mail or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.7.3. Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1. Daily Contractor Quality Control (CQC) Reports

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government within 24 hours after the date covered by the report. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.7.3.2. Deficiency Tracking

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.7.3.3. QC Requirements

The Contractor shall develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.7.3.4. Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.7.3.5. Labor and Equipment Hours

The Contractor shall log labor and equipment exposure hours on a daily basis. This data will be rolled up into a monthly exposure report.

1.7.3.6. Accident/Safety Tracking Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This supplemental entry is not to be considered as a substitute for completion of mandatory notification and reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.3.7. Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.7.3.8. Hazard Analysis

The Contractor shall use QCS to develop a hazard analysis for each feature of work included in its CQC Plan. The hazard analysis shall address any hazards, or potential hazards, that may be associated with the work

1.7.4. Submittal Management

The Government will provide the submittal register form, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. The Contractor and Designer of Record (DOR) shall develop and maintain a complete list of all submittals, including completion of all data columns and shall manage all submittals. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. QCS and RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.7.5. Schedule

The Contractor shall develop a design and construction schedule consisting of pay activities, in accordance with Section 01 32 01.00 10, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 10 PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.7.5.1. Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data from RMS, and schedule data using SDEF.

1.8. IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.9. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of QCS data is by using the government's SFTP repository built into QCS export function.. Other data should be submitted using E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROM for data transfer. Data on CDs shall be exported using the QCS built-in export function. If used, CD-ROMs will be submitted in accordance with the following:

1.9.1. File Medium

The Contractor shall submit required data on CD-ROMs. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.9.2. Disk Or Cd-Rom Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.9.3. File Names

The files will be automatically named by the QCS software. The naming convention established by the QCS software shall not be altered in any way by the Contractor.

1.10. MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions.

The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.11. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

End of Section 01 45 01.10

SECTION 01 45 04.00 10
CONTRACTOR QUALITY CONTROL

1.0 GENERAL

1.1. REFERENCES

1.2. PAYMENT

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. QUALITY CONTROL PLAN

3.3. COORDINATION MEETING

3.4. QUALITY CONTROL ORGANIZATION

3.5. SUBMITTALS AND DELIVERABLES

3.6. CONTROL

3.7. TESTS

3.8. COMPLETION INSPECTION

3.9. DOCUMENTATION

3.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Refer to the latest edition, as of the date of the contract solicitation.

- ASTM INTERNATIONAL (ASTM)
- ASTM D 3740 Minimum Requirements for Agencies
Engaged in the Testing and/or Inspection
of Soil and Rock as Used in Engineering
Design and Construction
- ASTM E 329 Agencies Engaged in the Testing
and/or Inspection of Materials Used in
Construction
- U.S. ARMY CORPS OF ENGINEERS (USACE)
ER 1110-1-12 Quality Management

1.2. PAYMENT

There will be no separate payment for providing and maintaining an effective Quality Control program. Include all costs associated therewith in the applicable unit prices or lump-sum prices contained in the Contract Line Item Schedule.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product, which complies with the contract requirements. The system shall cover all design and construction operations, both onsite and offsite, and shall be keyed to the proposed design and construction sequence. The site project superintendent is responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2. QUALITY CONTROL PLAN

Furnish for Government review, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Design and construction may begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. The Government will not permit work outside of the features of work included in an accepted interim plan to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The Designer of Record shall develop a program for any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors. Include the special inspection plan in the QC Plan.

3.2.1. Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

3.2.1.1. A description of the quality control organization. Include a chart showing lines of authority and an acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. A CQC System Manager shall report to the project superintendent or someone higher in the contractor's organization.

3.2.1.2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Also include those responsible for performing and documenting the inspections required by the International Codes and the special inspection program developed by the designer of record.

3.2.1.3. A copy of the letter to the CQC System Manager, signed by an authorized official of the firm, which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Furnish copies of these letters.

3.2.1.4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

3.2.1.5. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Use only Government approved Laboratory facilities.

3.2.1.6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

3.2.1.7. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

3.2.1.8. Reporting procedures, including proposed reporting formats.

3.2.1.9. A list of the definable features of work. A definable feature of work is a task, which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.1.10. A list of all inspections required by the International Codes and the special inspection program required by the code and this contract.

3.2.2. Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

3.2.2.1. The Contractor's QCP Plan shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, competent, independent reviewers identified in the DQC Plan shall review all documents. Use personnel who were not involved in the design effort to produce the design to perform the independent technical review (ITR). The ITR is intended as a quality control check of the design. Include, at least, but not necessarily limited to, a review of the contract requirements (the accepted contract or task order proposal and amended RFP), the basis of design, design calculations, the design configuration management documentation and check the design documents for

errors, omissions, and for coordination and design integration. The ITR team is not required to examine, compare or comment concerning alternate design solutions but should concentrate on ensuring that the design meets the contract requirements. Correct errors and deficiencies in the design documents prior to submitting them to the Government.

3.2.2.2. Include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists at each design phase as part of the project documentation.

3.2.2.3. A Design Quality Control Manager, who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated, shall implement the DQC Plan. This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. Notify the Government, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

3.2.3. Acceptance of Plan

Government acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4. Notification of Changes

After acceptance of the CQC Plan, notify the Government in writing of any proposed change. Proposed changes are subject to Government acceptance.

3.3. COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor and the Government shall meet and discuss the Contractor's quality control system. Submit the CQC Plan for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. The Government will prepare minutes of the meeting for signature by both parties. . The minutes shall become a part of the contract file. There may be occasions when either party will call for subsequent conferences to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4. QUALITY CONTROL ORGANIZATION

3.4.1. Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure contract compliance. The CQC organization shall also include personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly furnish complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2. CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System

Manager shall be a graduate engineer, graduate architect, or a BA/BS graduate of an ACCE accredited construction management college program. The CQC system Manager may alternately be an engineering technician with at least 2 years of college and an ICC certification as a Commercial Building Inspector (Residential Building Inspector certification will be required for Military Family Housing projects). In addition, the CQC system manager shall have a minimum of 5 years construction experience on construction similar to this contract. The CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. Assign the CQC System Manager no other duties (except may also serve as Safety and Health Officer, if qualified and if allowed by Section 00 73 00). Identify an alternate for the CQC System Manager in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager but the alternate may have other duties in addition to serving in a temporary capacity as the acting QC manager.

3.4.3. CQC Personnel

3.4.3.1. In addition to CQC personnel specified elsewhere in the contract provide specialized CQC personnel to assist the CQC System Manager in accordance with paragraph titled Area Qualifications.

3.4.3.2. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; **are not intended to be full time, but must be physically present at the construction site during work on their areas of responsibility**; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan. **One person may cover more than one area, provided that they are qualified to perform QC activities for the designated areas below and provided that they have adequate time to perform their duties:**

3.4.4. Experience Matrix

3.4.4.1. Area Qualifications

3.4.4.1.1. Civil - Graduate Civil Engineer or (BA/BS) graduate in construction management with 4 years experience in the type of work being performed on this project or engineering technician with 5 yrs related experience.

3.4.4.1.2. Mechanical - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Mechanical Inspector with 5 yrs related experience.

3.4.4.1.3. Electrical - Graduate Electrical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Electrical Inspector with 5 yrs related experience.

3.4.4.1.4. Structural - Graduate Structural Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or person with an ICC certification as a Reinforced Concrete Special Inspector and Structural Steel and Bolting Special Inspector (as applicable to the type of construction involved) with 5 yrs related experience.

3.4.4.1.5. Plumbing - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience, or person with an ICC certification as a Commercial Plumbing Inspector with 5 yrs related experience.

3.4.4.1.6. Concrete, Pavements and Soils Materials Technician (present while performing tests) with 2 yrs experience for the appropriate area

3.4.4.1.7. Testing, Adjusting and Balancing Specialist must be a member (TAB) Personnel of AABC or an experienced technician of the firm certified by the NEBB (present while testing, adjusting, balancing).

3.4.4.1.8. Design Quality Control Manager Registered Architect or Professional Engineer (not required on the construction site)

3.4.4.1.9. Registered Fire Protection Engineer with 4 years related experience or engineering technician with 5 yrs related experience (but see requirements for Fire Protection Engineer of Record to witness final testing in Section 01 10 00, paragraph 5.10, Fire Protection).

3.4.4.1.10. QC personnel assigned to the installation of the telecommunication system or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification. In lieu of BICSI certification, QC personnel shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products. QC personnel shall witness and certify the testing of telecommunications cabling and equipment.

3.4.5. Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors". This course is periodically offered at Coordinate with Resident Engineer's Office. Inquire of the District or Division sponsoring the course for fees and other expenses involved, if any, for attendance at this course.

3.4.6. Organizational Changes

When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5. SUBMITTALS AND DELIVERABLES

Make submittals as specified in Section 01 33 00 **SUBMITTAL PROCEDURES**. The CQC organization shall certify that all submittals and deliverables are in compliance with the contract requirements.

3.6. CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The CQC organization shall conduct at least three phases of control for each definable feature of the construction work as follows:

3.6.1. Preparatory Phase

Perform this phase prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

3.6.1.1. A review of each paragraph of applicable specifications, reference codes, and standards. Make a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field at the preparatory inspection. Maintain these copies in the field, available for use by Government personnel until final acceptance of the work.

3.6.1.2. A review of the contract drawings.

3.6.1.3. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

3.6.1.4. Review of provisions that have been made to provide required control inspection and testing.

3.6.1.5. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

3.6.1.6. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

3.6.1.7. A review of the appropriate activity hazard analysis to assure safety requirements are met.

3.6.1.8. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

3.6.1.9. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

3.6.1.10. Discussion of the initial control phase.

3.6.1.11. Notify the Government at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2. Initial Phase

Accomplish this phase at the beginning of a definable feature of work. Include the following actions:

3.6.2.1. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

3.6.2.2. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

3.6.2.3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

3.6.2.4. Resolve all differences.

3.6.2.5. Check safety to include compliance with and upgrading of the Accident Prevention plan and activity hazard analysis. Review the activity analysis with each worker.

3.6.2.6. Notify the Government at least 24 hours in advance of beginning the initial phase. The CQC System Manager shall prepare and attach to the daily CQC report separate minutes of this phase. Indicate exact location of initial phase for future reference and comparison with follow-up phases.

3.6.2.7. Repeat the initial phase any time acceptable specified quality standards are not being met.

3.6.3. Follow-up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Conduct final follow-up checks and correct deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

3.6.4. Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7. TESTS

3.7.1. Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements and project design documents. Upon request, furnish to the Government

duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory, or establish an approved testing laboratory at the project site. The Contractor may elect to use a laboratory certified and accredited by the Concrete and cement Reference Laboratory (CCRL) or by AASHTO Materials Reference Laboratory (AMRL) for testing procedures that those organizations certify. The Contractor shall perform the following activities and record and provide the following data:

3.7.1.1. Verify that testing procedures comply with contract requirements and project design documents.

3.7.1.2. Verify that facilities and testing equipment are available and comply with testing standards.

3.7.1.3. Check test instrument calibration data against certified standards.

3.7.1.4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

3.7.1.5. Include results of all tests taken, both passing and failing tests, recorded on the CQC report for the date taken. Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2. Testing Laboratories

3.7.2.1. Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2. Capability Recheck

If the selected laboratory fails the capability check, the Government will assess the Contractor a charge of \$1,375 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3. Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4. Furnishing or Transportation of Samples for Government Quality Assurance Testing

The Contractor is responsible for costs incidental to the transportation of samples or materials. Deliver samples of materials for test verification and acceptance testing by the Government to the Corps of Engineers Laboratory, f.o.b., at the following address:

- For delivery by mail:
Resident Engineer's Office
Ken Green
Bldg. 1254 South 11th Ave.
Ft McCoy, WI 54656
- For other deliveries:
Coordinate with Resident Engineer's Office

Ken Green
Bldg. 1254 South 11th Ave.
Ft McCoy, WI 54656

The area or resident office will coordinate, exact delivery location, and dates for each specific test.

3.8. COMPLETION INSPECTION

3.8.1. Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. Prepare a punch list of items which do not conform to the approved drawings and specifications and include in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2. Pre-Final Inspection

As soon as practicable after the notification above, the Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Correct any items noted on the Pre-Final inspection in a timely manner. Accomplish these inspections and any deficiency corrections required by this paragraph within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3. Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall attend the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups and major commands may also attend. The Government will formally schedule the final acceptance inspection based upon results of the Pre-Final inspection. Provide notice to the Government at least 14 days prior to the final acceptance inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9. DOCUMENTATION

3.9.1. Maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers using government-provided software, QCS (see Section 01 45 01.10). The report includes, as a minimum, the following information:

3.9.1.1. Contractor/subcontractor and their area of responsibility.

3.9.1.2. Operating plant/equipment with hours worked, idle, or down for repair.

3.9.1.3. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

- 3.9.1.4. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the applicable control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.
- 3.9.1.5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- 3.9.1.6. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- 3.9.1.7. Offsite surveillance activities, including actions taken.
- 3.9.1.8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- 3.9.1.9. Instructions given/received and conflicts in plans and/or specifications.
- 3.9.1.10. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the ITR team, the ITR review comments, responses and the record of resolution of the comments.
- 3.9.2. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. Furnish the original and one copy of these records in report form to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, submit one report for every 7 days of no work and on the last day of a no work period. Account for all calendar days throughout the life of the contract. The first report following a day of no work shall be for that day only. The CQC System Manager shall sign and date reports. The report shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

3.10. NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

End of Section 01 45 04.00 10

**SECTION 01 50 02
TEMPORARY CONSTRUCTION FACILITIES**

1.0 OVERVIEW

- 1.1. GENERAL REQUIREMENTS
- 1.2. AVAILABILITY AND USE OF UTILITY SERVICES
- 1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN
- 1.4. PROTECTION AND MAINTENANCE OF TRAFFIC
- 1.5. MAINTENANCE OF CONSTRUCTION SITE
- 1.6. GOVERNMENT FIELD OFFICE

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.1.1. Site Plan

Prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Also indicate if the use of a supplemental or other staging area is desired.

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1. See Section 00 72 00, Contract Clauses and Section 00 73 00, Special Contract Requirements, for Utility Availability requirements.

1.2.2. Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.3. Telephone

Make arrangements and pay all costs for desired telephone facilities.

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1. Bulletin Board

Immediately upon beginning of onsite work, provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Display legible copies of the aforementioned data until work is completed. Remove the bulletin board from the site upon completion of the project.

1.3.2. Project and Safety Signs

Erect a project sign and a site safety sign with informational details as provided by the Government at the Post award conference, within 15 days prior to any work activity on project site. Update the safety sign data daily, with light colored metallic or non-metallic numerals. Remove the signs from the site upon completion of the project. Engineer Pamphlet EP 310-1-6a contains the standardized layout and construction details for the signs. It can be found through a GOOGLE Search or try <http://www.usace.army.mil/publications/eng-pamphlets/ep310-1-6a/s-16.pdf>.

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

Provide access and temporary relocated roads as necessary to maintain traffic. Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Take measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, as required by the State and local authorities having jurisdiction. Protect the traveling public from damage to person and property.

The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. Investigate the adequacy of existing roads and the allowable load limit on these roads. Repair any damage to roads caused by construction operations.

1.4.1. Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Construct haul roads with suitable grades and widths. Avoid sharp curves, blind corners, and dangerous cross traffic. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Provide adequate lighting to assure full and clear visibility for full width of haul road and work areas during any night work operations. Remove haul roads designated by the Contracting Officer upon completion of the work and restore those areas.

1.4.2. Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5. MAINTENANCE OF CONSTRUCTION SITE

Mow grass and vegetation located within the boundaries of the construction site for the duration of the project, from NTP to contract completion. Edge or neatly trim grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers from NTP to contract completion.

1.6. GOVERNMENT FIELD OFFICE

1.6.1. Resident Engineer's Office

Provide the Government Resident Engineer with an office, approximately 300 square feet in floor area, co-located on the project site with the Contractor's office and providing space heat, air conditioning, electric light and power, power and communications outlets and toilet facilities consisting of at least one lavatory and at least one water closet complete with connections to water and sewer mains. Provide a mail slot in the door or a lockable mail box mounted on the surface of the door. Provide outlets for 2 government phones and same number of LAN connections for Government computers. Coordinate with the Resident Engineer for locations. Provide a conference room with space large enough for 6 personnel to hold meetings. Provide a minimum of two outlets per government work station and at least one outlet per 10 feet of wall space for other government equipment. Provide at least twice weekly janitorial service. Remove the office facilities upon completion of the work and restore those areas. Connect and disconnect utilities in accordance with local codes and to the satisfaction of the Contracting Officer.

1.6.2. Trailer-Type Mobile Office

The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Contracting Officer and providing as a minimum the facilities specified above. Securely anchor the trailer to the ground at all four corners to guard against movement during high winds, per EM 385-1-1.

End of Section 01 50 02

**SECTION 01 57 20.00 10
ENVIRONMENTAL PROTECTION**

1.0 GENERAL REQUIREMENTS

- 1.1. SUBCONTRACTORS
- 1.2. ENVIRONMENTAL PROTECTION PLAN
- 1.3. PROTECTION FEATURES
- 1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS
- 1.5. NOTIFICATION

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

- 3.1. LAND RESOURCES
- 3.2. WATER RESOURCES
- 3.3. AIR RESOURCES
- 3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL
- 3.5. RECYCLING AND WASTE MINIMIZATION
- 3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES
- 3.7. BIOLOGICAL RESOURCES
- 3.8. INTEGRATED PEST MANAGEMENT
- 3.9. PREVIOUSLY USED EQUIPMENT
- 3.10. MILITARY MUNITIONS
- 3.11. TRAINING OF CONTRACTOR PERSONNEL
- 3.12. POST CONSTRUCTION CLEANUP

1.0 GENERAL REQUIREMENTS

Minimize environmental pollution and damage that may occur as the result of construction operations. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this contract. Comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.1. SUBCONTRACTORS

Ensure compliance with this section by subcontractors.

1.2. ENVIRONMENTAL PROTECTION PLAN

1.2.1. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Define issues of concern within the Environmental Protection Plan as outlined in this section. Address each topic in the plan at a level of detail commensurate with the environmental issue and required construction task(s). Identify and discuss topics or issues which are not identified in this section, but which the Contractor considers necessary, after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, submit the Plan for review and Government approval. The Contractor shall meet with the Government prior to implementation of the Environmental Protection Plan, for the purpose of discussing the implementation of the initial plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. Maintain and keep the Environmental Protection Plan current onsite.

1.2.2. Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.2.3. Contents

The plan shall include, but shall not be limited to, the following:

1.2.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.2.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.2.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.2.3.4. Description of the Contractor's environmental protection personnel training program

1.2.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. Include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.2.3.6. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site

1.2.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.2.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.2.3.9. Drawing showing the location of on-installation borrow areas.

1.2.3.10. A spill control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The spill control plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

- (a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Government and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.
- (b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup
- (c) Training requirements for Contractor's personnel and methods of accomplishing the training
- (d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.
- (e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency
- (f) The methods and procedures to be used for expeditious contaminant cleanup

1.2.3.11. A solid waste management plan identifying waste minimization, collection, and disposals methods, waste streams (type and quantity), and locations for solid waste diversion/disposal including clearing debris and C&D waste that is diverted (salvaged, reused, or recycled). Detail the contractor's actions to comply with, and to participate in, Federal, state, regional, local government, and installation sponsored recycling programs to reduce the volume of solid waste at the source. Identify any subcontractors responsible for the transportation, salvage and disposal of solid waste. Submit licenses or permits for solid waste disposal sites that are not a commercial operating facility. Attach evidence of the facility's ability to accept the solid waste to this plan. A construction and demolition waste management plan, similar to the plan specified in the UFGS 01 74 19 (formerly 01572) may be used as the non-hazardous solid waste management plan. Provide a Non-Hazardous Solid Waste Diversion Report. Submit the report on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and each quarter thereafter (e.g. the first working day of January, April, July, and October) until the end of the project. Additionally, a summary report, with all data fields, is required at the end of the project. The report shall indicate the total type and amount of waste generated, total type and amount of waste diverted, type and amount of waste sent to waste-to-energy facility and alternative daily cover, in tons along with the percent that was diverted. Maintain, track and report construction and demolition waste data in a manner such that the installation can enter the data into the Army SWAR database, which separates data by type of material. A cumulative report in LEED Letter Template format may be used but must be modified to include the date disposed of/diverted and include the above stated diversion data. NOTE: The Solid Waste Diversion Reports are separate documentation than the LEED documentation.

1.2.3.12. DELETED.

1.2.3.13. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

1.2.3.14. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of

these materials. In accordance with EM 385-1-1, include a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time in the contaminant prevention plan. Update the plan as new hazardous materials are brought on site or removed from the site. Reference this plan in the storm water pollution prevention plan, as applicable.

1.2.3.15. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, include a copy of the permit and associated documents as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, include documentation that the waste water treatment plant Operator has approved the flow rate, volume, and type of discharge.

1.2.3.16. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. Include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Government.

1.2.3.17. A pesticide treatment plan, updated, as information becomes available. Include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. Follow AR 200-1, Chapter 5, Pest Management, Section 5-4, "Program Requirements" for data required to be reported to the Installation.

1.3. PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Government shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. Both the Contractor and the Government will sign this survey, upon mutual agreement as to its accuracy and completeness. The Contractor develop a plan that depicts how it will protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Government and may require an extended review, processing, and approval time. The Government reserves the right to disapprove alternate methods, even if they are more cost effective, if the Government determines that the proposed alternate method will have an adverse environmental impact.

1.5. NOTIFICATION

The Government will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Government of the proposed corrective action and take such action when approved by the Government. The Government may issue an order stopping all or part of the

work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Government may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

Confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. Do not attach or fasten any ropes, cables, or guys to any trees for anchorage unless specifically authorized. Provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Remove all stone, soil, or other materials displaced into uncleared areas..

3.1.1. Work Area Limits

Prior to commencing construction activities, mark the areas that need not be disturbed under this contract. Mark or fence isolated areas within the general work area which are not to be disturbed. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. Personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.1.2. Landscape

Clearly identify trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved by marking, fencing, or wrapping with boards, or any other approved techniques. Restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

Provide erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. Coordinate with approving authorities (federal, state, etc.) for specific requirements to be included in the plan. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. Keep the area of bare soil exposed at any one time by construction operations to a minimum necessary. Construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Remove any temporary measures after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Government. Make only approved temporary movement or relocation of Contractor facilities. Provide erosion and sediment controls for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant and/or work areas to protect adjacent areas.

3.2. WATER RESOURCES

Monitor construction activities to prevent pollution of surface and ground waters. Do not apply toxic or hazardous chemicals to soil or vegetation unless otherwise indicated. Monitor all water areas affected by construction activities. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or federally issued Clean Water Act permits.

3.2.1. Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments or impede state-designated flows.

3.2.2. Wetlands

Do not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Comply with all Federal and State air emission and performance laws and standards for equipment operation, activities, or processes.

3.3.1. Particulates

Control dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants, including weekends, holidays and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods are permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with all State and local visibility regulations.

3.3.2. Odors

Control odors from construction activities at all times. Odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning is not allowed on the project site unless specified in other sections of the specifications or by written authorization. Specific times, locations, and manners of burning shall be subject to approval.

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.4.1. Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Conduct handling, storage, and disposal to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The minimum acceptable off-site solid waste disposal option is a Subtitle D RCRA permitted landfill. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Dispense chemicals, ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. The Government may periodically review this documentation. Collect chemical waste in corrosion resistant, compatible containers. Monitor and remove collection drums to a staging or storage area when contents are within 6 inches of the top. Classify, manage, store, and dispose of wastes in accordance with Federal, State, and local laws and regulations.

3.4.3. Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes; protect it from the weather by placing it in a safe covered location and take precautionary measures, such as berming or other appropriate measures, against accidental spillage. Store, describe, package, label, mark, and placard hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. Transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. Dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Immediately report spills of hazardous or toxic materials to the Government and the Facility Environmental Office. Contractor will be responsible for cleanup and cleanup costs due to spills. Contractor is responsible for the disposition of Contractor generated hazardous waste and excess hazardous materials.

3.4.4. Fuel and Lubricants

Conduct storage, fueling and lubrication of equipment and motor vehicles in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

Participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. Line and berm fueling areas and establish storm water control structures at discharge points for site run-off. Keep a liquid containment clean-up kit available at the fueling area.

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. Protect and preserve these resources during the life of the Contract. Temporarily suspend all activities that may damage or alter such resources, if any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found during excavation or other construction activities. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, notify the Government so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitat. Protect threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

Coordinate, through the Government, with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application, in order to minimize impacts to existing fauna and flora. Discuss

integrated pest management strategies with the IPMC and receive concurrence from the IPMC, through the COR, prior to the application of any pesticide associated with these specifications. Give IMPC personnel the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Deliver pesticides, approved for use on the Installation, to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

Use the services of a subcontractor for pesticide application whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

A state certified pesticide applicator shall apply pesticides in accordance with EPA label restrictions and recommendations.

3.9. PREVIOUSLY USED EQUIPMENT

Clean all previously used construction equipment prior to bringing it onto the project site. Ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the USDA jurisdictional office for additional cleaning requirements.

3.10. MILITARY MUNITIONS

Immediately stop work in that area and immediately inform the Government, in the event military munitions, as defined in 40 CFR 260, are discovered or uncovered.

3.11. TRAINING OF CONTRACTOR PERSONNEL

Train personnel in all phases of environmental protection and pollution control. Conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. The training and meeting agenda shall include methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.12. POST CONSTRUCTION CLEANUP

Clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade, fill and seed the entire disturbed area, unless otherwise indicated.

**SECTION 01 62 35
RECYCLED/RECOVERED MATERIAL**

1.0 GENERAL

1.1. REFERENCES

1.2. OBJECTIVES

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

- U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
- 40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2. OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials, when incorporated into the work under this contract, shall contain at least the minimum percentage of recycled or recovered materials indicated by EPA unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be use by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

End of Section 01 62 35

**SECTION 01 78 02.00 10
CLOSEOUT SUBMITTALS**

1.0 OVERVIEW

- 1.1. SUBMITTALS
- 1.2. PROJECT RECORD DOCUMENTS
- 1.3. EQUIPMENT DATA
- 1.4. CONSTRUCTION WARRANTY MANAGEMENT
- 1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING
- 1.6. OPERATION AND MAINTENANCE MANUALS
- 1.7. FIELD TRAINING
- 1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY
- 1.9. LEED REVIEW MEETINGS
- 1.10. RED ZONE MEETING
- 1.11. FINAL CLEANING
- 1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY"

EXHIBIT 1 SAMPLE RED ZONE MEETING CHECKLIST

1.0 OVERVIEW

1.1. SUBMITTALS

Government approval is required for any submittals with a "G" designation; submittals not having a "G" designation are for Designer of Record approval or for information only. Submit the following in accordance with Section 01 33 00 submittals:

SD-02 Shop Drawings

- As-Built Drawings - G
 - Drawings showing final as-built conditions of the project. Provide electronic drawing files as specified in Section 01 33 16, 3 sets of blue-line prints and one set of the approved working as-built drawings.

SD-03 Product Data

- As-Built Record of Equipment and Materials
 - Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.
- Construction Warranty Management Plan
 - Three sets of the construction warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.
- Warranty Tags
 - Two record copies of the warranty tags showing the layout and design.
- Final Cleaning
 - Two copies of the listing of completed final clean-up items.

1.2. PROJECT RECORD DOCUMENTS

1.2.1. As-Built Drawings – G

An as-built drawing is a construction drawing revised to reflect the final as-built conditions of the project as a result of modifications and corrections to the project design required during construction. The final as-built drawings shall not have the appearance of marked up drawings, but that of professionally prepared drawings as if they were the "as designed" drawings.

1.2.2. Maintenance of As-Built Drawings

1.2.2.1. The Configuration Management Plan shall describe how the Contractor will maintain up-to-date drawings, how it will control and designate revisions to the drawings and specifications (In accordance with Special Contract Requirement: ***Deviating from the Accepted Design*** and Section 01 33 16: ***Design after Award***, the Designer of Record's approval is necessary for any revisions to the accepted design).

1.2.2.2. Make timely updates, carefully maintaining a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the construction drawings. Enter changes and corrections on drawings promptly to reflect "Current Construction". Perform this update no less frequently than weekly for the blue line drawings and update no less frequently than quarterly for the CADD/CAD and BIM files, which were prepared previously in accordance with Section 01 33 16. Include a confirmation that the as-builts are up to date with the submission of the monthly project schedule.

1.2.2.3. If the DB Contractor fails to maintain the as-built drawings as required herein, the Government will retain from the monthly progress payment, an amount representing the estimated monthly cost of maintaining the as-built drawings. Final payment with respect to separately priced facilities or the contract as a whole will be withheld until the Contractor submits acceptable as-built drawings and the Government approves them.

1.2.2.4. The marked-up set of drawings shall reflect any changes, alterations, adjustments or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design.

1.2.2.5. Typically, room numbers shown on the drawings are selected for design convenience and do not represent the actual numbers intended for use by the end user. Final as-built drawings shall reflect actual room numbers adopted by the end user.

1.2.2.6. If there is no separate contract line item (CLIN) for as-built drawings, the Government will withhold the amount of \$35,000, or 1% of the present construction value, whichever is the greater, until the final as-built drawing submittal has been approved by the Government.

1.2.3. Underground Utilities

The drawings shall indicate, in addition to all changes and corrections, the actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Locate Valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Record average elevation of the top of each run or underground structure..

1.2.4. Partial Occupancy

For projects where portions of construction are to be occupied or activated before overall project completion, including portions of utility systems, supply as-built drawings for those portions of the facility being occupied or activated at the time the facility is occupied or activated. Show this same as-built information previously furnished on the final set of as-built drawings.

1.2.5. As-Built Conditions That are Different From the construction Drawings

Accurately reflect all as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the construction drawings on each drawing. If the as-built condition is accurately reflected on a shop drawing, then furnish that shop drawing in CADD format. Reference the final as-built construction drawing the shop drawing file that includes the as-built information. In turn, the shop drawing shall reference the applicable construction as-built drawing. Delete any options shown on drawings and not selected clearly reflect options selected on final as-built drawings.

1.2.6. Additional As-Built Information that Exceeds the Detail Shown on the construction Drawings:

These as-built conditions include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the construction drawings, piping, and equipment drawings. Include locations of all explorations, logs of all explorations, and results of all laboratory testing, including those provided by the Government. Furnish all such shop drawings in CADD /CADformat. Include fire protection details, such as wiring, performed for the design of the project.

1.2.7. Final As-Built Drawings

Submit final as-built CADD/CAD and BIM Model(s) and Facility Data files at the time of Beneficial Occupancy of the project or at a designated phase of the project. In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, submit a new DVD with all drawing sheets and three blue-line copies of affected sheets which depict additional changes.

1.2.8. Title Blocks

In accordance with the configuration management plan, clearly mark title blocks to indicate final as-built drawings.

1.2.9. Other As-Built Documents

Provide scans of all other documents such as design analysis, catalog cuts, certification documents that are not available in native electronic format in an organized manner in Adobe.pdf format.

1.2.9.1. LEED Documentation

Update LEED documentation on at least a monthly basis and have it available for review by the Government on the jobsite at all times during construction. Submit the final LEED Project Checklist(s), final LEED submittals checklist and complete project documentation, verifying the final LEED score and establishing the final rating. Provide full support to the validation review process, including credit audits. See also the LEED documentation requirements in Section 01 33 16, DESIGN AFTER AWARD.

1.2.9.2. GIS Documentation

Provide final geo-referenced GIS database of the new building footprint along with any changes made to exterior of the building. The intent of capturing the final building footprint and exterior modifications in a GIS database is to provide the installation with a data set of the comprehensive changes made to the landscape as a result of the construction project. The Government will incorporate this data set into the installations existing GIS MasterPlan or Enterprise GIS system. The GIS database deliverable shall follow a standard template provided to the Contractor by the Government, adhere to detailed specifications outlined in ECB No 2006-15, and be documented using the Federal Geographic Data Committee (FGDC) metadata standard.

1.3. EQUIPMENT DATA

1.3.1. Real Property Equipment

Provide an Equipment-in-Place list of all installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. Include the cost of each piece of installed property F.O.B. construction site. For each of the items which is specified herein to be guaranteed for a specified period from the date of acceptance thereof, provide the following information: The name, serial and model number address of equipment supplier, or manufacturer originating the guaranteed item. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Furnish the list as one (1) reproducible and three (3) copies thirty (30) calendar days before completion of any segment of the contract work which has an incremental completion date.

1.3.2. Maintenance and Parts Data

Furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication showing detailed parts data on all other equipment subject to repair and maintenance procedures not otherwise required in Operations and Maintenance Manuals specified elsewhere in this contract. Distribution of directives shall follow the same requirements as listed in paragraph above.

1.3.3. Construction Specifications

Furnish permanent electronic files of final as-built construction specifications, including modifications thereto, with the as-built drawings.

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.4.1. Prior to the end of the one year warranty, the Government may conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging". The Contractor shall replace all damaged materials and locate and repair sources of moisture penetration.

1.4.2. Management

1.4.2.1. Warranty Management Plan

Develop a warranty management plan containing information relevant to the clause **Warranty of Construction** in FAR 52.246-21. Submit the warranty management plan for Government approval at least 30 days before the planned pre-warranty conference. In the event of phased turn-over of the contract, update the Warranty Management Plan as necessary to include latest information required. Include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Submit warranty information made available during the construction phase prior to each monthly pay estimate. Assemble information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. The Contractor, Government, including the Customer Representative shall jointly conduct warranty inspections, 4 months and 9 months, after acceptance. The warranty management plan shall include, but shall not be limited to, the following information:

- (1) Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the contractors, subcontractors, manufacturers or suppliers involved.
- (2) Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.
- (3) A list for each warranted equipment, item, feature of construction or system indicating:
 - (i) Name of item.
 - (ii) Model and serial numbers.
 - (iii) Location where installed.
 - (iv) Name and phone numbers of manufacturers or suppliers.
 - (v) Names, addresses and telephone numbers of sources of spare parts.
 - (vi) Warranties and terms of warranty. Include one-year overall warranty of construction. Indicate those items, which have extended warranties with separate warranty expiration dates.
 - (vii) Cross-reference to warranty certificates as applicable.
 - (viii) Starting point and duration of warranty period.
 - (ix) Summary of maintenance procedures required to continue the warranty in force.
 - (x) Cross-reference to specific pertinent Operation and Maintenance manuals.
 - (xi) Organization, names and phone numbers of persons to call for warranty service.
 - (xii) Typical response time and repair time expected for various warranted equipment.
- (4) The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.
- (5) Procedure and status of tagging of all equipment covered by extended warranties.
- (6) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.4.3. Performance Bond

1.4.3.1. The Contractor's Performance Bond will remain effective throughout the construction warranty period.

1.4.3.2. In the event the Contractor or his designated representative(s) fails to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Government shall have

a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Government shall have the work performed by others, and after completion of the work, may make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.4.3.3. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Government will have the right to recoup expenses from the bonding company.

1.4.3.4. Following oral or written notification of required warranty repair work, the Contractor will respond as dictated by para. 1.4.5. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Government to proceed against the Contractor as outlined in the paragraph 1.4.5.5 and/or above.

1.4.4. Pre-Warranty Conference

Prior to contract completion, or completion of any phase or portion of contract to be turned over, and at a time designated by the Contracting Officer, the Contractor shall meet with the Government to develop a mutual understanding with respect to the requirements of this clause. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Government for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, will be continuously available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of his responsibilities in connection with other portions of this provision.

1.4.5. Contractor's Response to Warranty Service Requirements.

Following Government oral or written notification, which may include authorized installation maintenance personnel, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below. Submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframe specified, the Government will perform the work and backcharge the construction warranty payment item established.

1.4.5.1. First Priority Code 1 Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

1.4.5.2. Second Priority Code 2 Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

1.4.5.3. Third Priority Code 3 All other work to be initiated within 3 work days and work continuously to completion or relief.

1.4.5.4. The "Warranty Service Priority List" is as follows:

- Code 1 - Air Conditioning System
 - (a) Buildings with computer equipment.
 - (b) Barracks, mess halls (entire building down).
- Code 2 - Air Conditioning Systems
 - (a) Recreational support.
 - (b) Air conditioning leak in part of building, if causing damage.
 - (c) Air conditioning system not cooling properly

- (d) Admin buildings with Automated Data Processing (ADP) equipment not on priority list.
 - Code 1 - Doors
- (a) Overhead doors not operational.
 - Code 1 - Electrical
- (a) Power failure (entire area or any building operational after 1600 hours).
- (b) Traffic control devices.
- (c) Security lights.
- (d) Smoke detectors and fire alarm systems
- (e) Power or lighting failure to an area, facility, portion of a facility, which may adversely impact health, safety, security, or the installation's mission requirement, or which may result in damage to property.
 - Code 2 - Electrical
- (a) Power failure (no power) for unoccupied buildings or portions thereof or branch circuits within occupied buildings, not listed as Code 1.
- (a) Receptacle and lights, not listed as code 1.
 - Code 3 - Electrical
- (a) Street, parking area lights
 - Code 1 - Gas
- (a) Leaks and breaks.
- (b) No gas to cantonment area.
 - Code 1 - Heat
- (a) Area power failure affecting heat.
- (b) Heater in unit not working.
 - Code 2 Heat
- (a) All heating system failures not listed as Code 1.
 - Code 3 - Interior
- (a) Floor damage
- (b) Paint chipping or peeling
 - Code 1 - Intrusion Detection Systems - N/A.
 - Code 2 - Intrusion Detection Systems other than those listed under Code 1
 - Code 1 - Kitchen Equipment
- (a) Dishwasher.
- (b) All other equipment hampering preparation of a meal.
 - Code 2 - Kitchen Equipment
- (a) All other equipment not listed under Code 1.
 - Code 2 - Plumbing
- (a) Flush valves not operating properly
- (b) Fixture drain, supply line commode, or water pipe leaking.
- (c) Commode leaking at base.
 - Code 3 - Plumbing
- (a) Leaking faucets

- Code 1 - Refrigeration
 - (a) Mess Hall.
 - (b) Medical storage.
- Code 2 - Refrigeration
 - (a) Mess hall - other than walk-in refrigerators and freezers.
- Code 1 - Roof Leaks
 - (a) Temporary repairs will be made where major damage to property is occurring.
- Code 2 - Roof Leaks
 - (a) Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.
- Code 1 - Sprinkler System
 - (a) All sprinkler systems, valves, manholes, deluge systems, and air systems to sprinklers.
- Code 1 - Tank Wash Racks (Bird Baths)
 - (a) All systems which prevent tank wash.
- Code 1 - Water (Exterior)
 - (a) Normal operation of water pump station.
- Code 2 - Water (Exterior)
 - (a) No water to facility.
- Code 1 - Water, Hot (and Steam)
 - (a) Barracks (entire building).
- Code 2 - Water, Hot
 - (a) No hot water in portion of building listed under Code 1

1.4.5.5. Should parts be required to complete the work and the parts are not immediately available, the Contractor shall have a maximum of 12 hours after arrival at the job site to provide the Government, with firm written proposals for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractor's proposals shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair. The Government will evaluate the proposed alternatives and negotiate the alternative considered to be in the best interest of the Government to reduce the impact of the emergency condition. Alternatives considered by the Government will include the alternative for the Contractor to "Do Nothing" while waiting until the required parts are available to perform permanent warranty repair. Negotiating a proposal which will require Government participation and the expenditure of Government funds shall constitute a separate procurement action by the using service.

1.4.6. Equipment Warranty Identification Tags

1.4.6.1. Provide warranty identification tags at the time of installation and prior to substantial completion shall provide warranty identification tags on all Contractor and Government furnished equipment which the Contractor has installed.

- (a) The tags shall be suitable for interior and exterior locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Tag each component of contractor furnished equipment that has differing warranties on its components.
- (b) Submit sample tags, representing how the other tags will look, for Government review and approval.
- (c) Tags for Warranted Equipment: The tag for this equipment shall be similar to the following: Exact format and size will be as approved.

MFG WARRANTY(IES) EXPIRE

MFG WARRANTY(IES) EXPIRE

(d) If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag

1.4.6.2. Execution: Complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment.

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Submit; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems prior to final inspection and transfer of the completed facility for approval, as specified in applicable technical specification sections.

1.6. OPERATION AND MAINTENANCE MANUALS

1.6.1. General Requirements

1.6.1.1. Inasmuch as the operations and maintenance manuals are required to operate and maintain the facility, the operations and maintenance (O&M) manuals will be considered a requirement prior to substantial completion of any facility to be turned over to the Government. Beneficial occupancy of all or portions of a facility prior to substantial completion will not relieve the Contractor of liquidated damages, if substantial completion exceeds the required completion date.

1.6.1.2. Provide one permanent electronic copy on CD-ROM and 2 hard copies of the Equipment Operating, Maintenance, and Repair Manuals. Provide separate manuals for each utility system as defined hereinafter. Submit Operations and Maintenance manuals for approval before field training or 90 days before substantial completion (whichever occurs earlier). If there is no separate CLIN for O&M Manuals, the Government will withhold an amount representing \$20,000, as non-progressed work, until submittal and approval of all O&M manuals are complete.

1.6.2. Definitions

1.6.2.1. Equipment

A single piece of equipment operating alone or in conjunction with other equipment to accomplish a system function.

1.6.2.2. System

A combination of one or more pieces of equipment which function together to accomplish an intended purpose (i.e. HVAC system is composed of many individual pieces of equipment such as fans, motors, compressors, valves, sensors, relays, etc.)

1.6.3. Hard Cover Binders

The manuals shall be hard cover with posts, or 3-ring binders, so sheets may be easily substituted. Print the following identification on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS," the project name, building number, and an indication of utility or systems covered, the name of the Contractor, and the Contract number. Manuals shall be approximately 8-1/2 by 11-inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for the project must be similar in appearance, and be of professional quality.

1.6.4. Warning Page

Provide a warning page to warn of potential dangers (if they exist, such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, high pressures, etc.). Place the warning page inside the front cover and in front of the title page. Include any necessary Material Safety Data Sheets (MSDS) here.

1.6.5. Title Page

The title page shall include the same information shown on the cover and show the name of the preparing firm and the date of publication.

1.6.6. Table of Contents

Each volume of the set of manuals for this project shall include a table of contents, for the entire set, broken down by volume.

1.6.7. GENERAL

Organize manuals according to the following format, and include information for each item of equipment. Submit a draft outline and table of contents for approval at 50% contract completion.

TABLE OF CONTENTS

PART I: Introduction

- Equipment Description
- Functional Description
- Installation Description

PART II: Operating Principles

PART III: Safety

PART IV: Preventive Maintenance

- Preventive Maintenance Checklist, Lubrication
- Charts and Diagrams

PART V: Spare Parts Lists

- Troubleshooting Guide
- Adjustments
- Common Repairs and Parts Replacement

PART VI: Illustrations

1.6.7.1. Part I-Introduction

Part I shall provide an introduction, equipment or system description, functional description and theory of operation, and installation instructions for each piece of equipment. Include complete instructions for uncrating, assembly, connection to the power source and pre-operating lubrication in the installation instructions as applicable. Illustrations, including wiring and cabling diagrams, are required as appropriate in this section. Include halftone pictures of the equipment in the introduction and equipment description, as well as system layout drawings with each item of equipment located and marked. Do not use copies of previously submitted shop drawings in these manuals.

1.6.7.2. Part II-Operating Principles

Part II shall provide complete instructions for operating the system, and each piece of equipment. Illustrations, halftone pictures, tables, charts, procedures, and diagrams are required when applicable. This will include step-by-step procedures for start-up and shutdown of both the system and each component piece of equipments, as well as adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions. Show performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates here, also. Marked-up catalogs or catalog pages do not satisfy this requirement. Present performance information as concisely as possible with only data pertaining to equipment actually installed. Include actual test data collected for Contractor performance here.

1.6.7.3. Part III-Safety

Part III shall contain the general and specific safety requirements peculiar to each item of equipment. Repeat safety information as notes cautions and warnings in other sections where appropriate to operations described.

1.6.7.4. Part IV-Preventive Maintenance

Part IV shall contain a troubleshooting guide, including detailed instructions for all common adjustments and alignment procedures, including a detailed maintenance schedule. Also include a diagnostic chart showing symptoms and solutions to problems. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings. Include instructions for the removal, disassembly, repair, reassembly, and replacement of parts and assemblies where applicable and the task is not obvious.

1.6.7.5. Part V-Spare Parts List

Part V shall contain a tabulation of description data and parts location illustrations for all mechanical and electrical parts. The heading of the parts list shall clearly identify the supplier, purchase order number, and equipment. Include the unit price for each part. List parts by major assemblies, and arrange the listing in columnar form. Include names and addresses of the nearest manufacturer's representatives, as well as any special warranty information. Provide a list of spare parts that are recommended to be kept in stock by the Government installation.

1.6.7.6. Part VI-Illustrations

Part VI shall contain assembly drawings for the complete equipment or system and for all major components. Include complete wiring diagrams and schematics. Other illustrations, such as exploded views, block diagrams, and cutaway drawings, are required as appropriate.

1.6.8. Framed Instructions

Post framed instructions are required for substantial completion. Post framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, including equipment, ductwork, piping valves, dampers, and control sequence at a location near the equipment described. Prepare condensed operating instructions explaining preventive maintenance procedures methods of checking the system for normal safe operation, valve schedule and procedures for safely starting and stopping the system in type form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. Submit proposed diagrams, instructions, and other sheets prior to posting. Post the framed instructions before field training.

1.6.9. (Reserved. See 1.7 for Field Training)

1.6.10. System/Equipment Requirements

1.6.10.1. Facility Heating System

Provide information on the following equipment: boilers, water treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

1.6.10.2. Air-Conditioning Systems

Provide information in chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

1.6.10.3. Temperature Control and HVAC Distribution Systems

Provide all information described for the following equipment: valves, fans, air handling units, pumps, boilers, converters and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation, control air compressors, control components (sensors, controllers, adapters and actuators), and flow measuring equipment.

1.6.10.4. Central Heating Plants

Provide the information described for the following equipment: boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return waters, etc.), water softeners, and valves.

1.6.10.5. Heating Distribution Systems

Provide the information described for the following equipment: valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.), and piping systems.

1.6.10.6. Exterior Electrical Systems

Provide information on the following equipment: power transformers, relays, reclosers, breakers, and capacitor bank controls.

1.6.10.7. Interior Electrical Systems

Provide information on the following equipment: relays, motor control centers, switchgear, solid state circuit breakers, motor controller, EPS lighting systems, wiring diagrams and troubleshooting flow chart on control systems, and special grounding systems.

1.6.10.8. Energy Monitoring and Control Systems

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

1.6.10.9. Domestic Water Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

1.6.10.10. Wastewater Treatment Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentations, laboratory test equipment chemical feeders, valves, scrapers, skimmers, comminutors, blowers, switching gear, and automatic controls.

1.6.10.11. Fire Protection Systems

Provide information on the following equipment: alarm valves, manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

1.6.10.12. Fire Alarm and Detection Systems

- (1) The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.
- (2) Provide all software; database with complete identification of programmable portions of system equipment and devices, and all other system programming data on all modes of the system; connecting cables; and proprietary equipment necessary for the operation, maintenance, testing, repair and programming, etc. of the system and that may be required for implementation of future changes to the fire system (additional and/or relocated initiating devices, notification devices, etc.
- (3) Provide all system and equipment technical data and computer software with the requisite rights to Government use, in accordance with the applicable contract clauses.
- (4) Training shall include software and programming required for the effective operation, maintenance, testing, diagnostics and expansion of the system.

1.6.10.13. Plumbing Systems

Provide information on the following equipment: water heaters, valves, pressure regulators backflow preventors, piping materials, and plumbing fixtures.

1.6.10.14. Liquid Fuels Systems

Provide information on the following equipment: tanks, automatic valves manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidic controls.

1.6.10.15. Cathodic Protection Systems

Provide information on the following material and equipment: rectifiers, meters, anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

1.6.10.16. Generator Installations

Provide information on the following equipment: generator sets, automatic transfer panels, governors, exciters, regulators starting systems, switchgear, and protective devices.

1.6.10.17. Miscellaneous Systems

Provide information on the following: communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, nurse call, paging, intercom, closed circuit TV, irrigation, sound and material delivery systems, kitchen, refrigeration, disposal, ice making equipment, and other similar type special systems not otherwise specified.

1.6.10.18. Laboratory, Environmental and Pollution Control Systems

Provide information on the following equipment: wet scrubbers, quench chambers, scrub tanks, liquid oil separators, and fume hoods.

1.7. FIELD TRAINING

Field Training is a requirement for substantial completion. Conduct a training course for the operating staff for each particular system. Conduct the training is to be conducted during hours of normal working time after the system is functionally complete. The field instructions shall cover all of the items contained in the Equipment Operating, Maintenance and Repair Manuals. The training will include both classroom and "hands-on" training. Submit a lesson plan outlining the information to be discussed during training periods. Submit this lesson plan for approval 90 days before contract completion before the field training occurs. Record training on DVD and furnish to the Government within ten (10) days following training. Document all training and furnish a list of all attendees.

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

Promptly furnish and require any sub-contractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or sub-contractor, except prices do not need to be provided for Government-Furnished Property.

1.9. LEED REVIEW MEETINGS

1.9.1. Pre-Closeout Meeting. Approximately 30 days before submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the documentation, determine which, if any, credits will be audited and identify any corrections/missing items prior to the closeout LEED documentation submittal.

1.9.2. Approximately 14 days after submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the LEED closeout

documentation. The review conference will include discussion of and resolution of all review comments to ensure consensus on achievement of credits and satisfactory documentation. At the review conference a final score will be determined and endorsed in writing by all parties.

1.10. RED ZONE MEETING

At approximately 80% of contract completion or 60 days before the anticipated Beneficial Occupancy Date (BOD), whichever occurs first, the Contractor and the Government's project delivery team will conduct what is known as the Red Zone Meeting to discuss the close-out process, to schedule the events and review responsibilities for actions necessary to produce a timely physical, as well as fiscal, project close-out. The Red Zone meeting derives its name from the football term used to describe the team effort to move the ball the last 20 yards into the end zone. The close-out of a construction project sometimes can be equally as hard and most definitely requires the whole team's efforts. The ACO will chair the meeting. If not already provided, shortly before the meeting, the Contractor shall provide an electronic copy or access to the CADD as-built drawings, completed commensurate with the amount of work completed at the time of the Red Zone Meeting, as an indicator of the Contractors' understanding of and ability to meet the USACE CADD Standards and to ensure that the Contractor is making progress with CADD As-Built requirements. EXHIBIT 1 is a generic meeting checklist.

1.11. FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements stated here. Remove stains, foreign substances, and temporary labels from surfaces. Vacuum carpet and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of operating equipment if cleaning isn't possible or practicable. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences and construction facilities. Submit a list of completed clean-up items on the day of final inspection.

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft provided with the final design package(s) (see Section 01 33 16, paragraph 3.7.5) and submit an accounting of all installed property on Interim Form DD1354 "Transfer and Acceptance of Military Real Property." Include any additional assets/improvements/alterations and cost updates from the Draft DD Form 1354. Contact the COR for any project specific information necessary to complete the DD Form 1354. This form will be a topic for the Red Zone Meeting discussed above. For information purposes, a blank DD Form 1354 (fill-able) in ADOBE (PDF) may be obtained at the following web site: <http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf> Submit the completed Checklist for Form DD1354 of Government-Furnished and Contractor-Furnished/Contractor Installed items. Attach this list to the updated DD Form 1354. Instructions for completing the form and a blank checklist (fill-able) in ADOBE (PDF) may be obtained at the following web site: http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_08.pdf

EXHIBIT 1

SAMPLE

Red Zone Meeting Checklist

Date: _____

Contract No.	
Description / Location	
Contractor	
Contracting Officer	

Action	Completion Milestone	√
Inspections		
Fire		
Safety		
Pre-final		
Mechanical Test & Balance		
Commissioning		
Landscaping Complete		
Erosion Control		
Beneficial Occupancy Date (BOD)		
Furniture Installation		
Comm Installation		
As-Built Drawings		
Provide all O&M manuals, tools, shop drawings, spare parts, etc. to customer		
Training of O&M Personnel		
Provide Warranty documents to Customer		
Contract completion		

Ribbon cutting		
Payroll Clearances		
DD Form 2626 - Construction Contractor Performance Evaluation		
DD Form 2631 – A-E Performance Rated after Construction		
Status of Pending Mods and REA's/Claims		
Final Payment Completed		
Release of Claims		
Return of Unobligated Funds		
Move Project from CIP to General Ledger		
Financial completion		

End of Section 01 78 02.00 10

Appendix A

Geotechnical Information

Geotechnical Data Report

Proposed DOIM Building, Project # 72008
Fort McCoy, Wisconsin
Contract W912QR-09-D-0057

Prepared For:

CorpVet, LLC
Milwaukee, Wisconsin

May 19, 2010
Giles Project No. 1D-1004012



GILES
ENGINEERING ASSOCIATES, INC.



Section:

GILES

ENGINEERING ASSOCIATES, INC.

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

- Atlanta, GA
- Baltimore, MD
- Dallas, TX
- Los Angeles, CA
- Milwaukee, WI
- Orlando, FL
- Tampa, FL

May 19, 2010

CorpVet, LLC
4200 N. Holton Building 105
Milwaukee, WI 53122

Attention: Mr. Sherman Mulberry

Subject: Geotechnical Data Report
Proposed DOIM Building, Project # 72008
Fort McCoy, Wisconsin
Contract W912QR-09-D-0057
Giles Project No. 1D-1004012

Dear Mr. Mulberry:

Giles Engineering Associates, Inc. has completed the drilling and laboratory testing for the above referenced project. This letter includes a description of the subsurface exploration and laboratory testing programs performed for the project. Copies of the test boring logs and the laboratory test results are enclosed in Appendix A.

SITE DESCRIPTION

The site is located within the post area of the Fort McCoy Military Reservation in Fort McCoy, Wisconsin. The project site area is depicted on Figure 1 enclosed in Appendix A. The geotechnical test borings (described later) were performed on April 26, 27, and 28 of 2010 and on those dates the project site area was generally grass-covered. Asphalt pavement was located in the southeast portion of the site. Existing buildings associated with the military reservation were also present. Based on our cursory observations, the site topography was generally flat and level.

GEOTECHNICAL SUBSURFACE EXPLORATION PROGRAM

The scope of the Geotechnical Subsurface Exploration Program was to evaluate subsurface conditions by performing fourteen drill rig test borings for the project using a 2003 CME High Torque 75 truck-mount drill rig with 3¼-inch inside diameter hollow stem auger drilling methods. The test borings were performed at locations determined by CH2M Hill as shown on the *Site Plan* (undated) prepared by CH2M Hill. Test Boring Nos. 8 and 11 were offset slightly from their planned locations due to the presence of buried utility lines. Test Boring Nos. 1 through 4 were 51 feet deep, as planned, in the proposed building area. Test Boring No. 5 was 76 feet deep, as planned, in the proposed building area. Test Boring Nos. 6 through 12 were 10 feet deep, as planned, in the proposed parking lot area. Test Boring Nos. 13 and 14 were 21 feet deep, as planned, in the proposed storm water detention area. The approximate test boring locations are indicated on the *Test Boring Location Plan* (Figure 1) enclosed in Appendix A. The x and y-coordinates of the test borings relative to the southwest corner of the existing building BD-01458 (adopted coordinates of x=0 and y=0) are provided on Figure 1 enclosed in Appendix A.



Geotechnical Data Report
Proposed DOIM Building, Project #72008
Fort McCoy, Wisconsin
Contract W912QR-09-D-0057
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The drill rig test borings were drilled with a truck-mounted drill rig and were extended to the above referenced depths ranging from 10 to 76 feet below the existing grades as designated by CH2M Hill. Access to the test boring locations was coordinated through the Department of the Army-Headquarters Fort McCoy and CorpVet, LLC. Logs of the test borings are provided on the *Records of Subsurface Exploration* enclosed in Appendix A.

Samples were collected from the drill rig test borings generally at continuous 2-foot sampling intervals to depths ranging from 10 to 12 feet, and at 5-foot sampling intervals thereafter to the maximum depths explored. As an exception, samples were collected at 1-foot sample intervals between depths ranging from 12 feet and the maximum 21-foot exploration depth at Test Boring Nos. 13 and 14. Standard Penetration Testing (SPT) was performed in each of the test borings. During Standard Penetration Testing, samples were collected from the test borings, at certain depths, using a split-barrel sampler. SPT sampling was performed with the drill rig equipment in general accordance with ASTM D1586 using a standard split-spoon sampler which is described in Appendix E, along with descriptions of other field procedures. Immediately after sampling, representative select portions of the samples were transferred from the sampler and retained in appropriate containers that were labeled at the site for identification. The retained samples were transported to Giles' geotechnical laboratory as part of the Geotechnical Subsurface Exploration Program. Additionally, the blow counts for each 6-inch sampling interval and the resulting N-values (blows per foot) were recorded during SPT sampling and are shown on the enclosed *Records of Subsurface Exploration*.

GEOTECHNICAL LABORATORY SERVICES

Samples that were retained at the site were classified by a geotechnical engineer using the descriptive terms and particle-size criteria shown on the *General Notes* in Appendix G, and by using the Unified Soil Classification System (ASTM D 2488-75) as a general guide. The classifications are shown on the *Records of Subsurface Exploration*, along with horizontal lines that show estimated depths of material change. Field-related information pertaining to the test borings is also shown on the *Records of Subsurface Exploration*. For simplicity and abbreviation, terms and symbols are used on the *Records of Subsurface Exploration*; the terms and symbols are defined on the *General Notes* enclosed in Appendix C.

A summary of the soil laboratory testing performed for this project is included as follows:

- Moisture Content Testing (ASTM D-2216)
- Particle Size Distribution with Percent Passing No. 200 Sieve (ASTM C-136/117)
- Particle Size Distribution with Hydrometer (ASTM D422)
- Resistivity (ASTM D4972) & pH (ASTM G57)
- Organic Content by Combustion (Loss-On-Ignition) (ASTM D-2974)
- California Bearing Ratio (ASTM D1883)
- Modified Proctor Compaction (ASTM 1557)

The soil laboratory testing was performed on samples approved by CH2M Hill. The results of the laboratory testing are summarized on the *Records of Subsurface Exploration* and/or are included on the laboratory testing figures (Figures 2 through 25) included in Appendix A. A summary of the moisture content, pH and resistivity test results are provided below.

Geotechnical Data Report
Proposed DOIM Building, Project #72008
Fort McCoy, Wisconsin
Contract W912QR-09-D-0057
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Moisture Content Tests

Moisture content tests (ASTM D-2216) were performed on a representative amount of soil samples to evaluate the soils general engineering properties. The moisture contents are reported on the *Records of Subsurface Exploration* and are also provided in the following table:

Test Boring Number	Depth (feet) ¹	Sample Identification Number	Moisture Content (percent)
1	2 to 4±	2-SS	18
	4 to 6±	3-SS	17
	6 to 8±	4-SS	16
2	2 to 4±	2-SS	17
	4 to 6±	3-SS	16
	6 to 8±	4-SS	17
3	2 to 4±	2-SS	17
	4 to 6±	3-SS	17
4	2 to 4±	2-SS	20
	4 to 6±	3-SS	18
5	2 to 4±	2-SS	16
	4 to 6±	3-SS	16
6	2 to 4±	2-SS	25
	4 to 6±	3-SS	16
	6 to 8±	4-SS	19
7	2 to 4±	2-SS	22
	4 to 6±	3-SS	18
8	2 to 4±	2-SS	179
	6 to 8±	4-SS	17
	8 to 10±	5-SS	31
9	2 to 4±	2-SS	17
	6 to 8±	4-SS	18
10	2 to 4±	2-SS	126
	4 to 6±	3-SS	18
11	2 to 4±	2-SS	15
	4 to 6±	3-SS	17
12	0 to 2±	1-SS	6
	2 to 4±	2-SS	51 (silty clay portion of sample) 20 (sand portion of sample)
	4 to 6±	3-SS	18
13	2 to 4±	2-SS	17
	4 to 6±	3-SS	18
	6 to 8±	4-SS	17
14	2 to 4±	2-SS	16
	4 to 6±	3-SS	16
	6 to 8±	4-SS	18

1) Depth relative to ground surface at time of subsurface exploration.

Geotechnical Data Report
 Proposed DOIM Building, Project #72008
 Fort McCoy, Wisconsin
 Contract W912QR-09-D-0057
 Project No. 1D-1004012
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Resistivity and pH Tests

Resistivity (ASTM D4972) and pH (ASTM G57) tests were performed in our geotechnical laboratory on soil samples collected from Test Boring No. 1 (4 to 6± feet) and Test Boring No. 2 (4 to 6± feet). The results of the pH and resistivity tests are summarized in the following table.

RESISTIVITY (ASTM D4972) & pH (ASTM G57)				
Test Boring Number	Depth (feet)	pH ¹	Resistivity ² (Ohm-cm)	
			Natural Moisture	Saturated
1	4 to 6±	6	39,000	39,000
2	4 to 6±	6	42,000	42,000

1. Using pH meter.
 2. Using water saturated soil box.

SUBSURFACE CONDITIONS

Since material sampling at the test borings was discontinuous, it was necessary for Giles to estimate conditions between sample intervals. The estimated conditions at the test borings are briefly discussed in this section and are described in more detail on the *Records of Subsurface Exploration*.

Regional Geology

Fort McCoy is situated in the "driftless," or unglaciated, area of southwestern Wisconsin, according to the Wisconsin Geological and Natural History Survey (WGNHS) *Ice Age Deposits of Wisconsin* map (1964). Soil in the vicinity of Fort McCoy consists primarily of rapidly permeable sands which formed from the underlying bedrock *Soil Survey of Monroe County, Wisconsin* (1984). The bedrock in the Fort McCoy vicinity consists of the Cambrian Jordan, Oneota, and Lone Rock formations, which are comprised primarily of sandstone, according to the WGNHS *Bedrock Geology of Wisconsin* map (1981).

Soil Conditions

Ground Surface Materials: Approximately 3 to 16 inches of topsoil was encountered at the ground surface at Test Boring Nos. 1 through 11, 13, and 14. The topsoil layer generally consisted of clayey silt and silty sand with fine roots and/or organic matter. The topsoil layer at Test Boring Nos. 7 and 8 was classified as fill. The topsoil layer at Test Boring Nos. 4, 6, 9, and 10 was classified as possible fill. Asphalt pavement that was about 3 inches thick was encountered at the ground surface at Test Boring No. 12. Approximately 6 inches of silty sand base course was encountered below the asphalt pavement at Test Boring No. 12.

Fill and Possible Fill: Fill consisting of silty clay and sand (with variable silt content) was encountered below the ground surface materials at Test Boring Nos. 7 and 12 and was present to a depth of about 4 feet below-grade. Possible fill consisting of sand (with variable silt content) was encountered below the topsoil at Test Boring Nos. 4, 6, and 9 and was present to depths between about 4 to 6 feet below-grade.

Possible Topsoil Fill or Possible Peat: Clayey silt classified as possible topsoil fill or possible peat was encountered below the topsoil at Test Boring Nos. 8 and 10 and was present to depths of about 4 and 3 feet below-grade, respectively. Based on the LOI test results, the material had high (27.3% and 47.6%) organic content.



Geotechnical Data Report
 Proposed DOIM Building, Project #72008
 Fort McCoy, Wisconsin
 Contract W912QR-09-D-0057
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Native Soil: Native soil below the ground surface materials at the test borings predominately consisted of loose to firm sand (with variable silt content) that was present to at least the 10 to 76-foot exploration depths.

Possible Weathered Bedrock: Possible weathered sandstone bedrock was encountered at depths of about 22 to 32 feet below-grade at Test Boring Nos. 1 through 5. The possible bedrock was present to at least the 51 and 76-foot exploration depths.

Groundwater Conditions

Water was measured within the test borings at depths ranging from 1.5 feet to 5.3 feet below-grade during or upon completion of drilling. The 24± hour water level readings at Test Boring Nos. 1, 3, and 5 were measured at depths ranging from 1.5 feet to 2.2 feet below-grade. The 48± hour water level readings at Test Boring Nos. 7 through 10 were measured at depths ranging from 3.0 to 5.5 feet below-grade. Water was not encountered at the 48± hour water level readings for Test Boring Nos. 2, 6, 11, and 13. On May 7, 2010 water was measured at a depth of 4.6 feet below-grade at Test Boring No. 1. Water was not encountered at Test Boring Nos. 2 through 14 for the May 7, 2010 water level readings.

A summary of the measured water conditions at the test boring locations is included in the following table:

Test Boring No. ¹	Water Measured During or Upon Completion of Drilling (Feet) ²	24-Hour Groundwater Level Readings (Feet) ²	48-Hour Groundwater Level Readings (Feet) ²	May 7, 2010 Well Readings (Feet) ²
1	1.5 to 2.0±	2.0±	N/A	4.6±
2	2.0 to 2.5±	N/A	Dry	Dry
3	1.5 to 2.2±	2.2±	N/A	Dry
4	4.0±	N/A	N/A	Dry
5	2.5±	1.5±	N/A	Dry
6	2.5±	N/A	Dry	Dry
7	4.5±	N/A	4.5±	Dry
8	4.0±	N/A	5.5±	Dry
9	5.0±	N/A	3.0±	Dry
10	2.8 to 3.0±	N/A	4.1±	Dry
11	5.0 to 5.3±	N/A	Dry	Dry
12	3.0 to 3.3±	N/A	N/A	Dry
13	4.9 to 5.0±	N/A	Dry	Dry
14	1.5 to 2.4±	N/A	N/A	Dry

Notes:
 1) See Figure 1 enclosed in Appendix A for Test Boring Locations.
 2) Depth relative to ground surface at time of subsurface exploration.
 N/A=Not Applicable

Geotechnical Data Report
 Proposed DOIM Building, Project #72008
 Fort McCoy, Wisconsin
 Contract W912QR-09-D-0057
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SEISMIC DESIGN CONSIDERATIONS

A soil Site Class C is recommended for seismic design. By definition, Site Class is based on the average properties of subsurface materials to a depth of 100 feet below the ground surface. Since 100-foot test borings were not requested or authorized for the project, it was necessary to estimate the Site Class based on the test borings, presumed area geology, and Table 1613.5.2 of the 2006 International Building Code.

FROST EMBEDMENT DEPTH

Based on information provided by the local building inspector, it is understood that a minimum 48-inch foundation frost embedment depth is required by the local building code.

CLOSURE

This report is based on Giles' proposal, which is dated April 22, 2010 and is referenced by Giles' proposal number 1GP-1004037. The actual services for the project varied somewhat from those described in the proposal because of the conditions that were encountered while performing the services and in consideration of the proposed project.

We appreciate the opportunity to be of service on this project. If there are any questions, or if we may be of further service should geotechnical problems develop during construction or observation of construction be desired, please do not hesitate to call at any time.

Very truly yours,

GILES ENGINEERING ASSOCIATES, INC.

Joleen A. Opala
 Project Manager

Paul J. Giese, P.E.
 Geotechnical Division Manager



Enclosures: Appendix A:

- Test Boring Location Plan (Figure 1)
- Particle Size Distribution Reports and Test Data (Figures 2 through 17) (32 pages)
- California Bearing Ratio Reports and Test Data (Figures 18 through 21) (12 pages)
- Modified Proctor Compaction Reports and Test Data (Figures 22 through 25) (12 pages)
- Moisture Content Test Data (3)
- Resistivity and pH Test Data (1)
- Loss-On-Ignition Test Data (1)
- Records of Subsurface Exploration (14)

Appendix B:

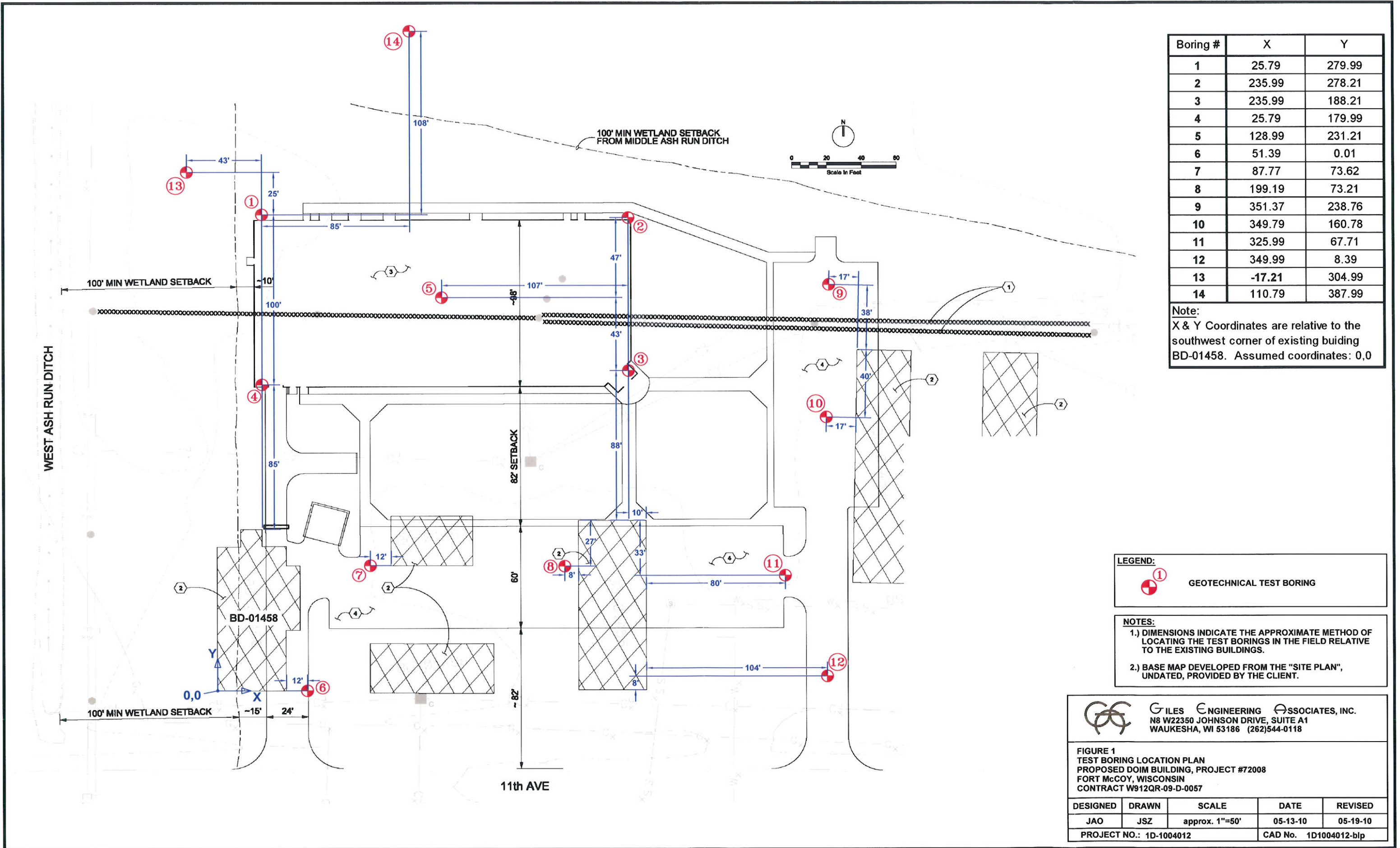
- Field Procedures

Appendix C:

- Laboratory Testing and Classification
- General Notes

Distribution: CorpVet, LLC
 Attn: Mr. Sherman Mulberry (3 U.S. Mail and 1 PDF to smulberry@corpvet.com)

Section:



Boring #	X	Y
1	25.79	279.99
2	235.99	278.21
3	235.99	188.21
4	25.79	179.99
5	128.99	231.21
6	51.39	0.01
7	87.77	73.62
8	199.19	73.21
9	351.37	238.76
10	349.79	160.78
11	325.99	67.71
12	349.99	8.39
13	-17.21	304.99
14	110.79	387.99

Note:
X & Y Coordinates are relative to the southwest corner of existing building BD-01458. Assumed coordinates: 0,0

LEGEND:

① GEOTECHNICAL TEST BORING

NOTES:

1.) DIMENSIONS INDICATE THE APPROXIMATE METHOD OF LOCATING THE TEST BORINGS IN THE FIELD RELATIVE TO THE EXISTING BUILDINGS.

2.) BASE MAP DEVELOPED FROM THE "SITE PLAN", UNDATED, PROVIDED BY THE CLIENT.

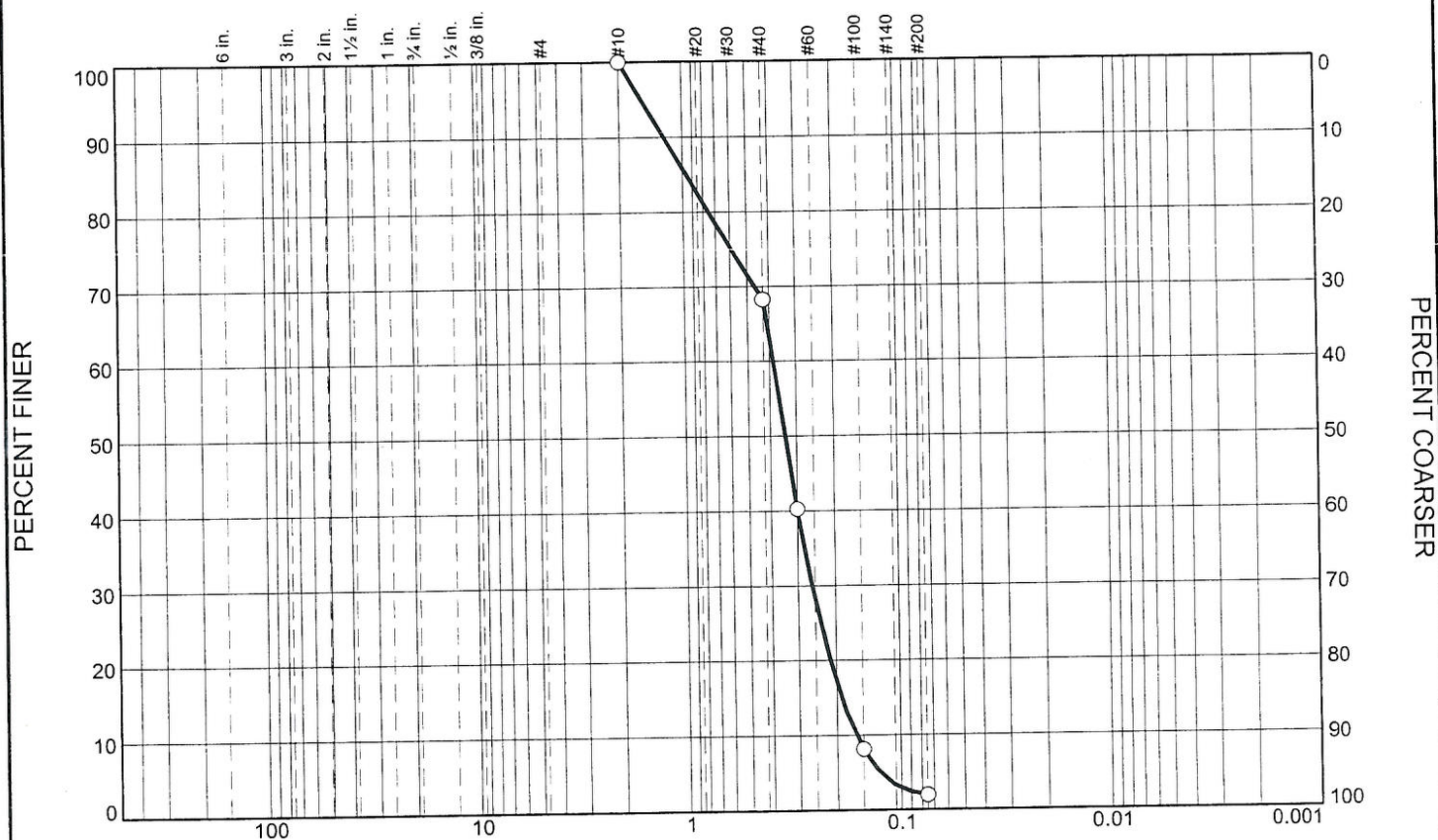
GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI 53186 (262)544-0118

FIGURE 1
TEST BORING LOCATION PLAN
PROPOSED DOIM BUILDING, PROJECT #72008
FORT MCCOY, WISCONSIN
CONTRACT W912QR-09-D-0057

DESIGNED	DRAWN	SCALE	DATE	REVISED
JAO	JSZ	approx. 1"=50'	05-13-10	05-19-10

PROJECT NO.: 1D-1004012 CAD No. 1D1004012-blp

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	31.7	66.3	2.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	68.3		
#50	40.2		
#100	8.1		
#200	2.0		

* (no specification provided)

Material Description

Brown fine to medium Sand, trace Silt

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₈₅= 0.9621

D₆₀= 0.3825

D₅₀= 0.3391

D₃₀= 0.2581

D₁₅= 0.1897

D₁₀= 0.1620

C_u= 2.36

C_c= 1.07

Classification

USCS=

AASHTO=

Remarks

Source of Sample: Test Boring No. 1

Depth: 2-4'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 2

WASHED SIEVE ANALYSIS TEST DATA SHEET
(ASTM C136)

Project Name:	Project Number: ID-1004012	
Technician:	Date: 5/7/10	Lab No.
Material Description:		Date Received:
Sample Source: B1 @ 2-4 LPI TARE 84.27 W 241.73 D 217.36 M.C. % 18.3		

WASHED SIEVE ANALYSIS

Sample + Tare 217.04 - Tare 84.09 = Sample 132.95 g

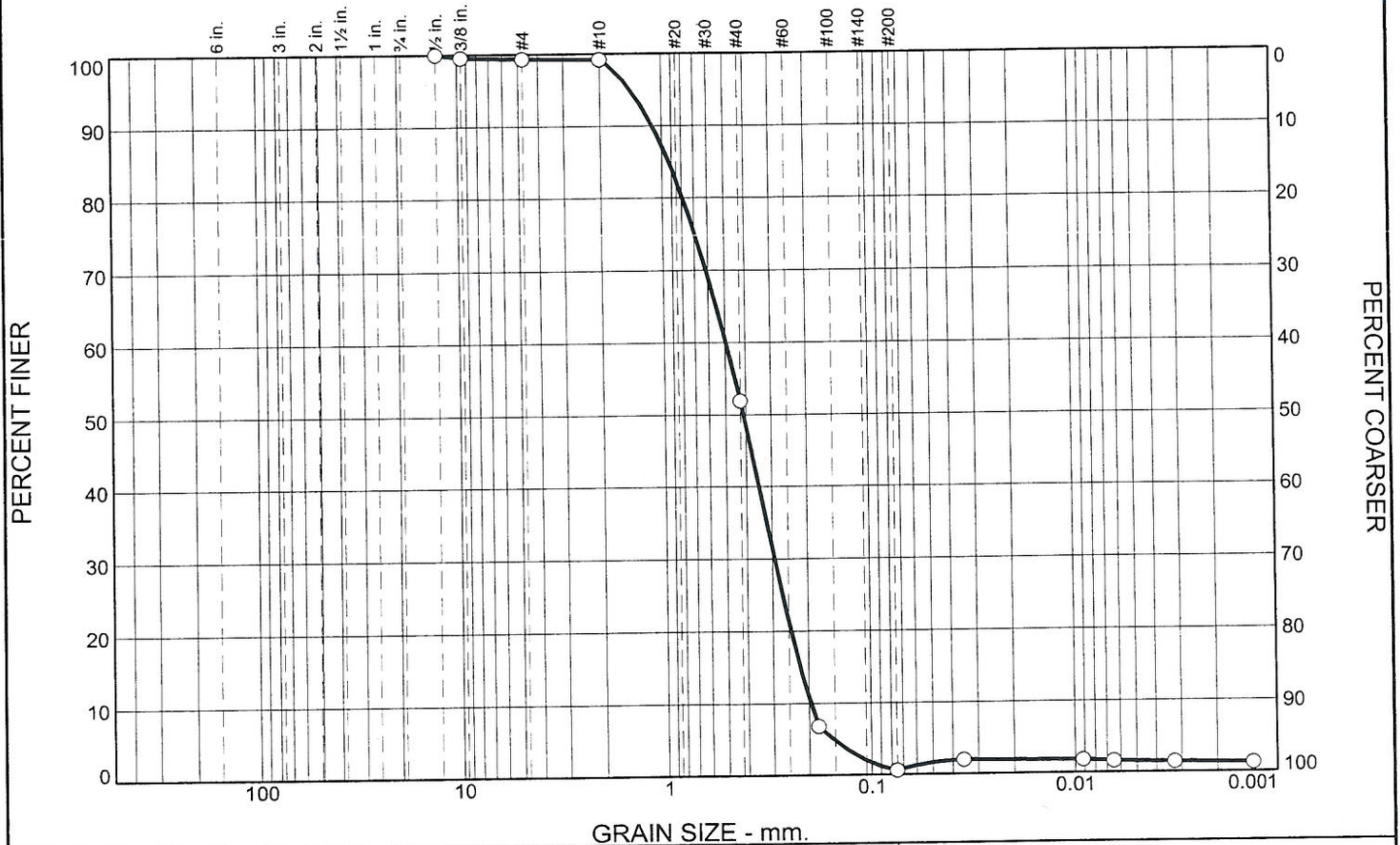
sieve size	weight retained	cum. weight retained	cumulative percent retained	total percent passing	specification
3"					
75mm					
2 1/2"					
62.5mm					
2"					
50mm					
1 1/2"					
37.5mm					
1"					
25mm					
3/4"					
19mm					
1/2"					
12.5mm					
3/8"					
9.5mm					
#4					
4.75mm					
#8/10					
2.36/2.0 mm		0			
#16 / 20					
1.18/0.60mm					
#30 / 40					
0.60/0.425mm		42.21			
#50					
0.300mm		79.44			
#100					
0.150mm		122.15			
#200					
0.075mm		130.33			

Sample Size: Maximum Particle Size

1" - 10,000gm
1/2" - 5,000gm
#4 - 1,000gm

Sieve Analysis dry @ 110c, weight to 0.1gm, report to nearest 1%
Washed sieve dry @ 110c, weight to 0.01gm, report to nearest 0.1%

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	0.1	47.3	51.3	0.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	99.5		
#4	99.3		
#10	99.2		
#40	51.9		
#80	6.8		
#200	0.6		

* (no specification provided)

Material Description

Pale Brown fine to medium Sand, trace Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.9254 D₆₀= 0.4955 D₅₀= 0.4109
D₃₀= 0.2923 D₁₅= 0.2210 D₁₀= 0.1970
C_u= 2.52 C_c= 0.88

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 2

Depth: 2-4'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

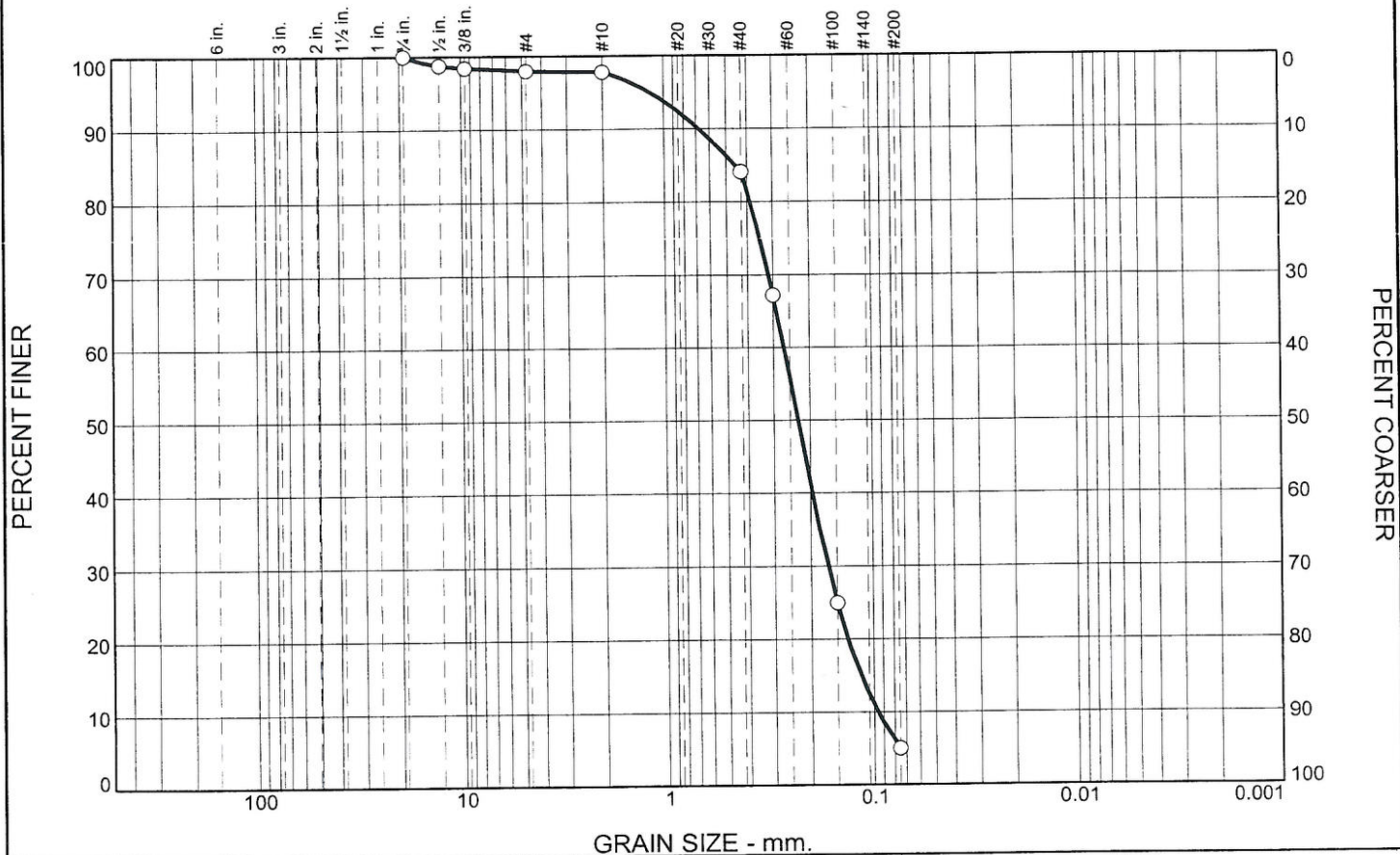
Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 3

C:D422

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)
1148								
2	9							
5								
15								
30	8.5							
60	8							
90								
120								
240	7.5							
1440	7.0							

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.0	0.2	13.7	79.1	5.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75	100.0		
0.5	98.7		
0.375	98.4		
#4	98.0		
#10	97.8		
#40	84.1		
#50	67.2		
#100	25.0		
#200	5.0		

* (no specification provided)

Material Description

Pale Brown fine Sand, little medium Sand, trace Silt and Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.4537 D₆₀= 0.2666 D₅₀= 0.2284
D₃₀= 0.1654 D₁₅= 0.1159 D₁₀= 0.0959
C_u= 2.78 C_c= 1.07

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 3

Depth: 4-6'

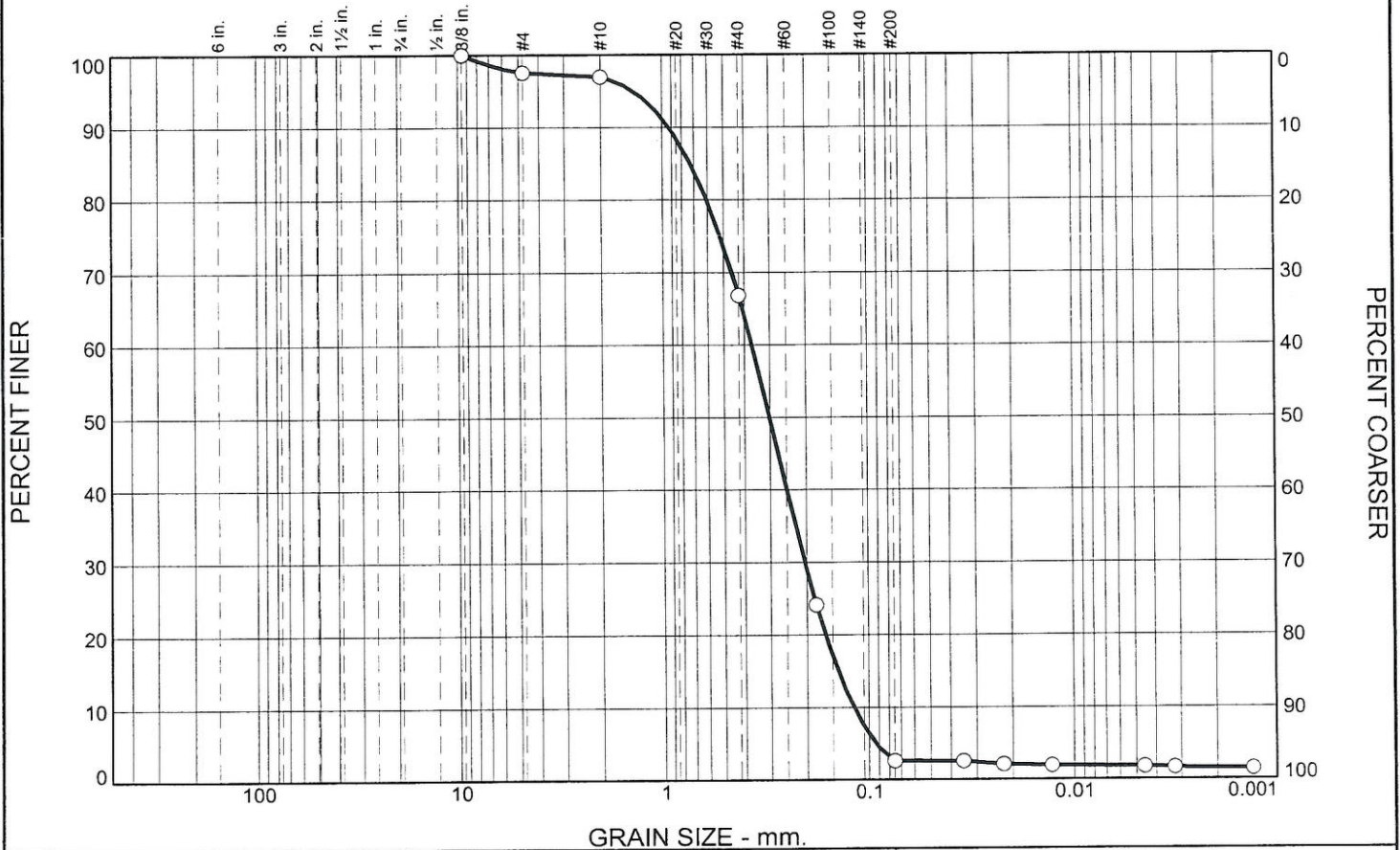
Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 4

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.5	0.5	30.2	64.2	0.8	1.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	97.5		
#10	97.0		
#40	66.8		
#80	24.1		
#200	2.6		

* (no specification provided)

Material Description

Brown fine to medium Sand, trace Silt, Clay and Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.7284 D₆₀= 0.3672 D₅₀= 0.3020
D₃₀= 0.2047 D₁₅= 0.1412 D₁₀= 0.1187
C_u= 3.09 C_c= 0.96

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 4

Depth: 4-6'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 5

PARTICLE SIZE ANALYSIS
(ASTM D422)

C:D422

NAME:	PROJ. NO.: 10-1024012	DATE: 5/7/10
CLIENT:	SAMPLE NO.:	TECH:

MATERIAL DESCRIPTION: _____

MATERIAL SOURCE: B4 @ 4-6 MD 154.45 W 529.32 D 472 10 MC.% 18.0

SIEVE ANALYSIS (plus no.4 material) sample size 317.58 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4				
1/2				
3/8		0		
4		7.79		

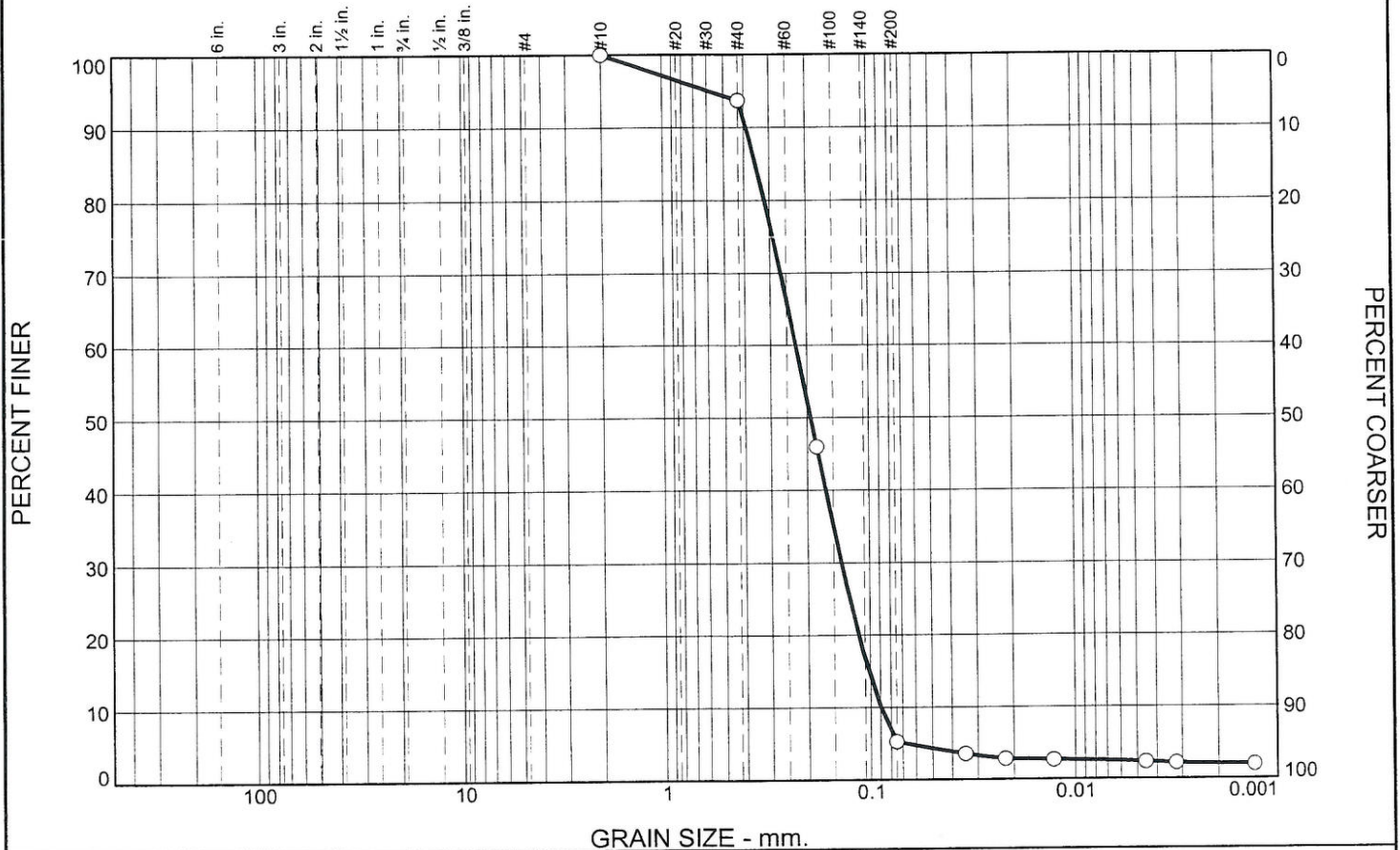
10

HYDROMETER (minus no.4 material) sample size 305.71 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10		9.66		
40		94.96		
200	80	229.59 297.58		

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)	
1051									
2	11.5								
5	10								
15	9.5								
30									
60									
90									
120	9								
240	2.5								
1440	0.5 g ⁰								

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	6.3	88.4	2.9	2.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	93.7		
#80	46.0		
#200	5.3		

* (no specification provided)

Material Description

Brown and Pale Brown fine Sand, trace medium Sand, Silt and Clay

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.3491 D₆₀= 0.2254 D₅₀= 0.1921
D₃₀= 0.1376 D₁₅= 0.1017 D₁₀= 0.0892
C_u= 2.53 C_c= 0.94

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 6

Depth: 6-8'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 6

PARTICLE SIZE ANALYSIS
(ASTM D422)

C:D422

15

TEST NAME:	PROJ. NO.: ID-1004012	DATE: 5/7/10
TEST:	SAMPLE NO.:	TECH:

MATERIAL DESCRIPTION: _____ M.C. % 19.4

MATERIAL SOURCE: BL @ 6-S M(11) TARE 161.46 W 498.47 D 443.74

SIEVE ANALYSIS (plus no.4 material) sample size 282.26 gms

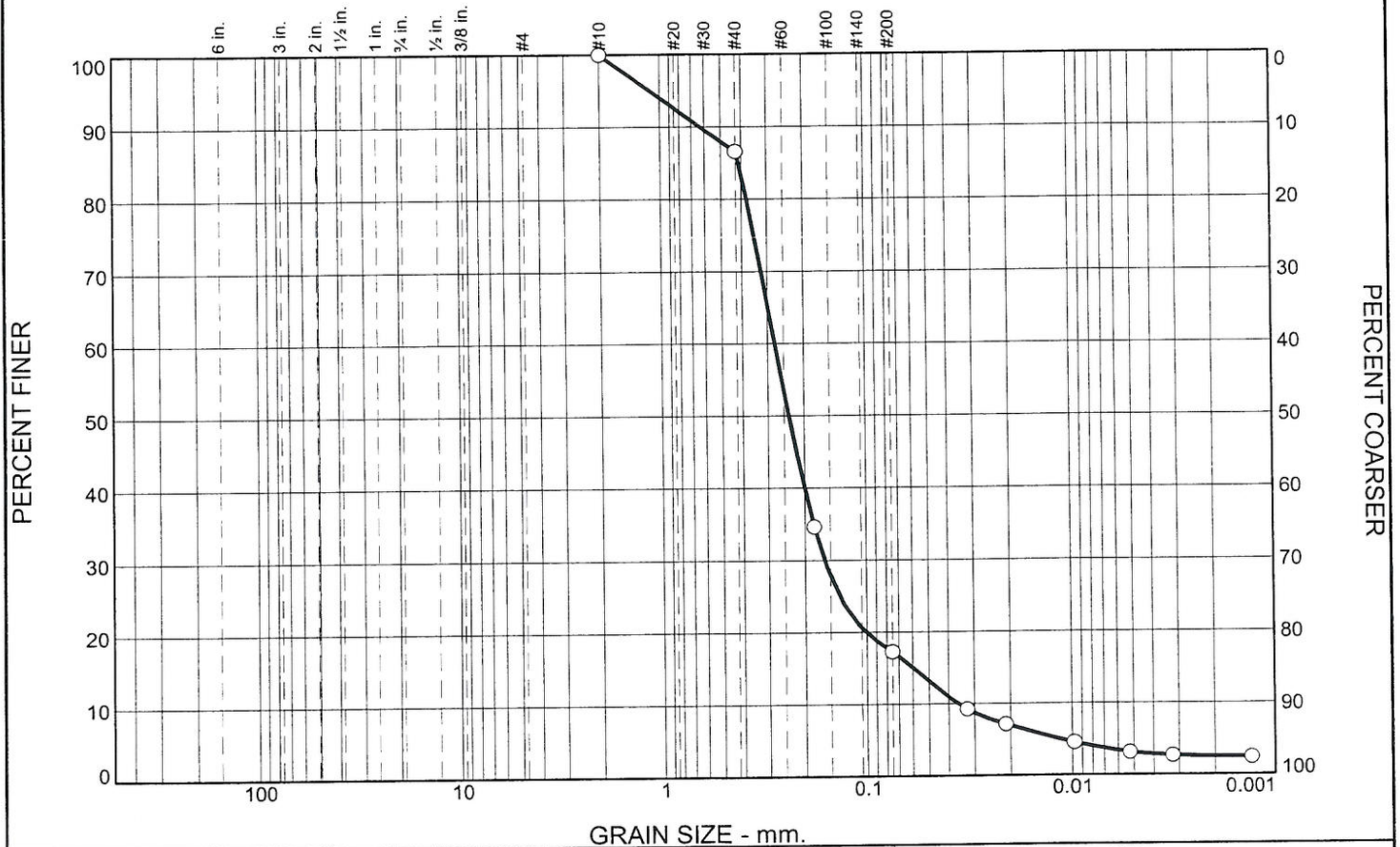
sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4				
1/2				
3/8				
4				

HYDROMETER (minus no.4 material) sample size 282.17 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10				
40		17.84		
200	80	152.47 267.32		

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)	
10-15									
2	13.5								
5	11.5								
15	11								
30									
60									
90									
120	10								
240	9.5								
1440	9.0								

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	13.4	69.3	14.2	3.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	86.6		
#80	34.6		
#200	17.3		

* (no specification provided)

Material Description

Very Dark Brown fine Sand, little medium Sand and Silt, trace Clay and fine roots

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.4124 D₆₀= 0.2764 D₅₀= 0.2373
D₃₀= 0.1607 D₁₅= 0.0595 D₁₀= 0.0357
C_u= 7.73 C_c= 2.61

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 7

Depth: 2-4'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 7

PARTICLE SIZE ANALYSIS
(ASTM D422)

C:D422

NAME:	PROJ. NO.: 1D-1004012	DATE: 5/7/10
	SAMPLE NO.:	TECH:

MATERIAL DESCRIPTION: _____ M.C.% 21.6

MATERIAL SOURCE: E7 @ 2-4 M10 TARE 149.38 W 406.09 D 360.43

SIEVE ANALYSIS (plus no.4 material)

sample size 211.55 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4				
1/2				
3/8				
4				

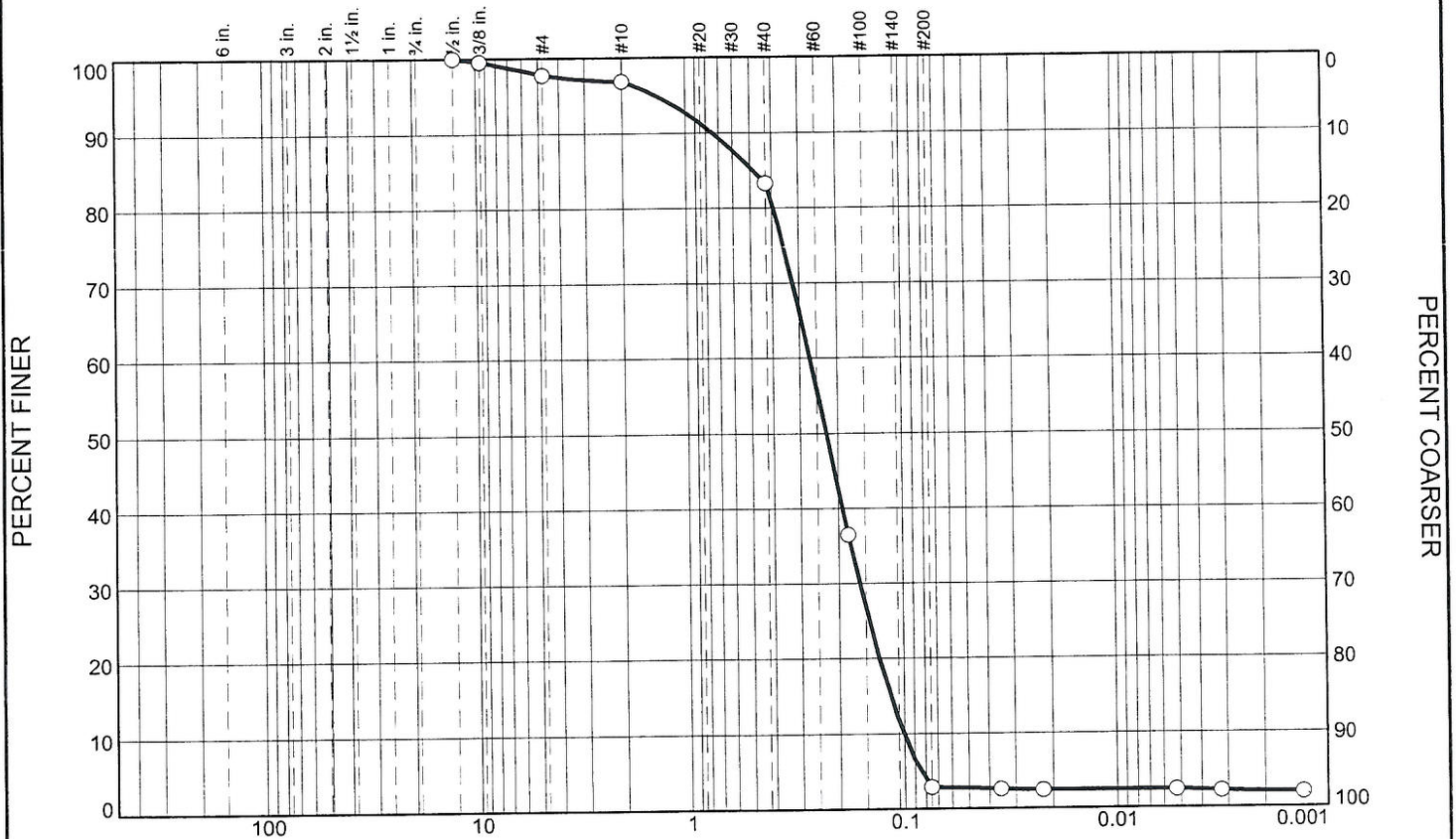
HYDROMETER (minus no.4 material)

sample size 209.89 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10				
40		28.22		
200	80	137.27 173.67		

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)	
1127									
2	23								
5	18.5								
15									
30	13								
60									
90	10								
120									
240	9.0								
1440	4.5								

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.2	0.9	13.6	80.4	0.5	2.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	99.5		
#4	97.8		
#10	96.9		
#40	83.3		
#80	36.5		
#200	2.9		

* (no specification provided)

Material Description

Brown fine Sand, little medium Sand, trace coarse Sand, Gravel, Silt and Clay

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.4830 D₆₀= 0.2688 D₅₀= 0.2270
D₃₀= 0.1598 D₁₅= 0.1158 D₁₀= 0.1009
C_u= 2.66 C_c= 0.94

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 8

Depth: 8-10'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 8

PARTICLE SIZE ANALYSIS
(ASTM D422)

C:D422

517

PROJECT NAME:	PROJ. NO.: 10-1004012	DATE: 5/7/10
CLIENT:	SAMPLE NO.:	TECH:

MATERIAL DESCRIPTION: M.C. % 30.5

MATERIAL SOURCE: B8 @ 8-10' MC TARE 149.68 W 481.83 D 404.17

SIEVE ANALYSIS (plus no.4 material) sample size 254.17 gms

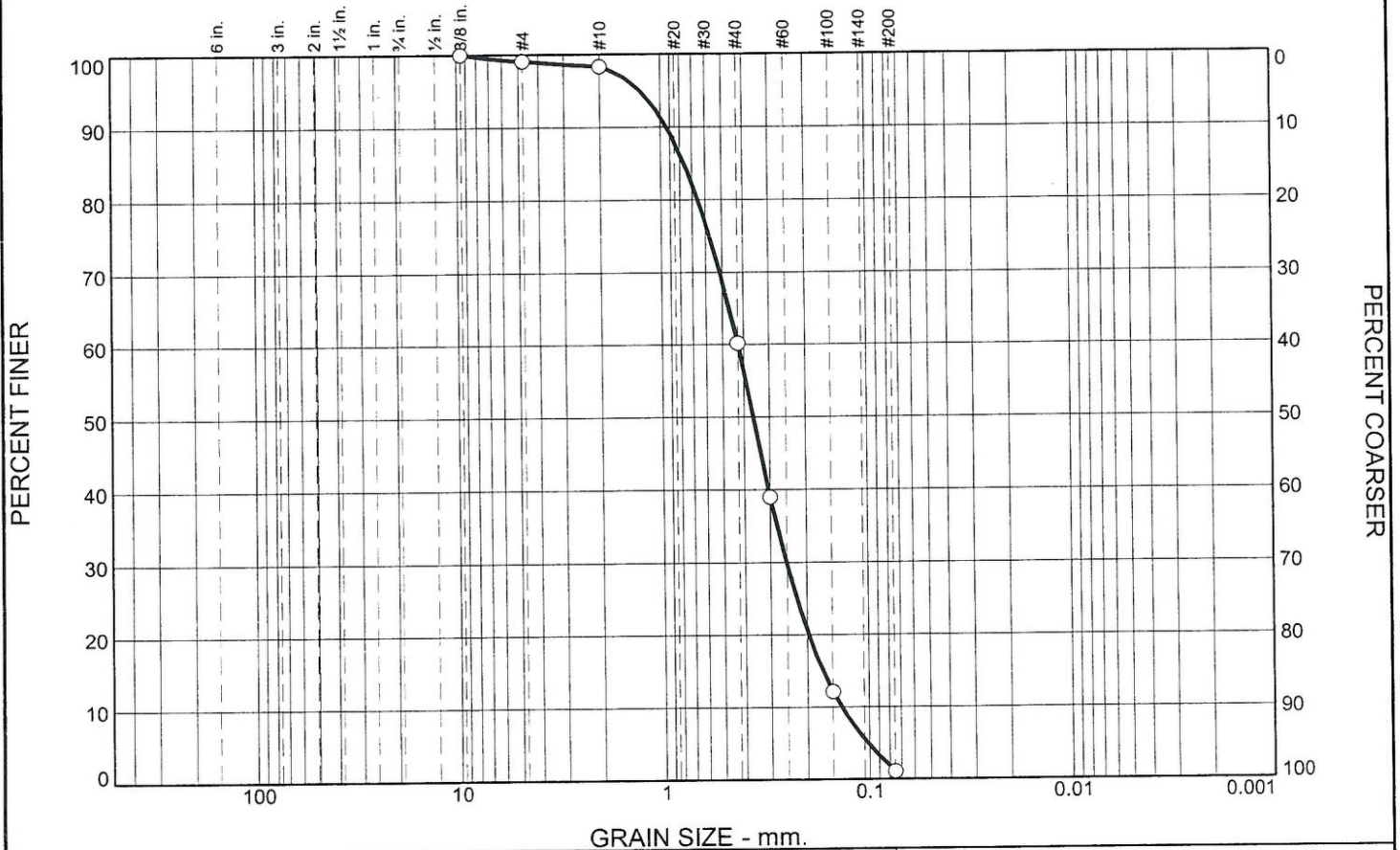
sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4				
1/2		0		
3/8		1.20		
4		5.67		

HYDROMETER (minus no.4 material) sample size 245.38 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10		7.95		
40		34.39		
200	80	153.0	238.11	

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)	
1141									
2	10								
5	9.5								
15									
30									
60									
90	9.4								
120									
240	9.0								
1440	8.3								

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	0.8	38.1	59.1	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.1		
#10	98.3		
#40	60.2		
#50	39.0		
#100	12.1		
#200	1.1		

* (no specification provided)

Material Description

Brown fine to medium Sand, trace Silt and fine roots

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.7639 D₆₀= 0.4238 D₅₀= 0.3597
D₃₀= 0.2524 D₁₅= 0.1678 D₁₀= 0.1364
C_u= 3.11 C_c= 1.10

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 9

Depth: 2-4'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 9

WASHED SIEVE ANALYSIS TEST DATA SHEET
(ASTM C136)

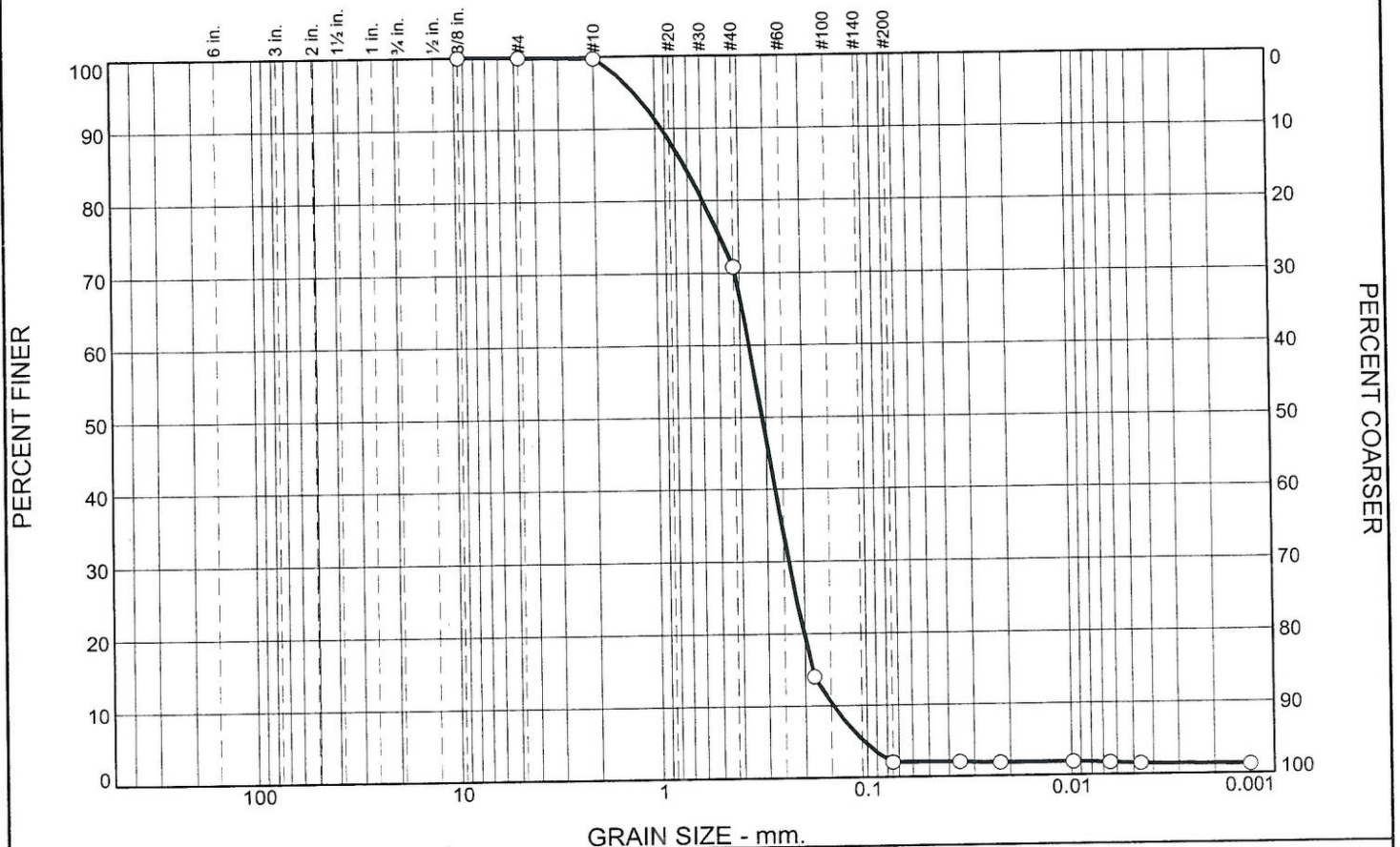
Project Name:	Project Number: ID-1004012	
Technician:	Date: 5/7/10	Lab No.:
Material Description:	Date Received:	
Sample Source: P9 @ 2-4 LPII TARE 85.57 W 385.36 D 342.89 M.C. % 11.5		

WASHED SIEVE ANALYSIS M9					
Sample + Tare 386.95		- Tare 129.57	= Sample 257.38 g		
sieve size	weight retained	cum. weight retained	cumulative percent retained	total percent passing	specification
3"					
75mm					
2 1/2"					
62.5mm					
2"					
50mm					
1 1/2"					
37.5mm					
1"					
25mm					
3/4"					
19mm					
1/2"					
12.5mm					
3/8"		0			
9.5mm					
#4		2.35			
4.75mm					
#8/10		4.26			
2.36/2.0 mm					
#16 / 20					
1.18/0.60mm					
#30 (40)		102.54			
0.60/0.425mm					
#50		157.09			
0.300mm					
#100		226.20			
0.150mm					
#200		254.52			
0.075mm					

Sample Size: Maximum Particle Size 1" - 10,000gm
 1/2" - 5,000gm
 #4 - 1,000gm

Sieve Analysis dry @ 110c, weight to 0.1gm, report to nearest 1%
 Washed sieve dry @ 110c, weight to 0.01gm, report to nearest 0.1%

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	28.9	68.7	0.6	1.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.9		
#10	99.7		
#40	70.8		
#80	14.0		
#200	2.1		

* (no specification provided)

Material Description

Brown fine to medium Sand, trace Silt and Clay

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.7273 D₆₀= 0.3597 D₅₀= 0.3129
D₃₀= 0.2369 D₁₅= 0.1837 D₁₀= 0.1459
C_u= 2.47 C_c= 1.07

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 10

Depth: 4-6'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 10

E

NAME:

DATE: 5-7-60

CLIENT:

SAMPLE NO.:

TECH:

MATERIAL DESCRIPTION: M.C.% 17.8

MATERIAL SOURCE: BID@4-6 MB TARE 89.65 W421.14 D371.08

SIEVE ANALYSIS (plus no.4 material)

sample size 2810 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4				
1/2				
3/8		0		
4		.24		

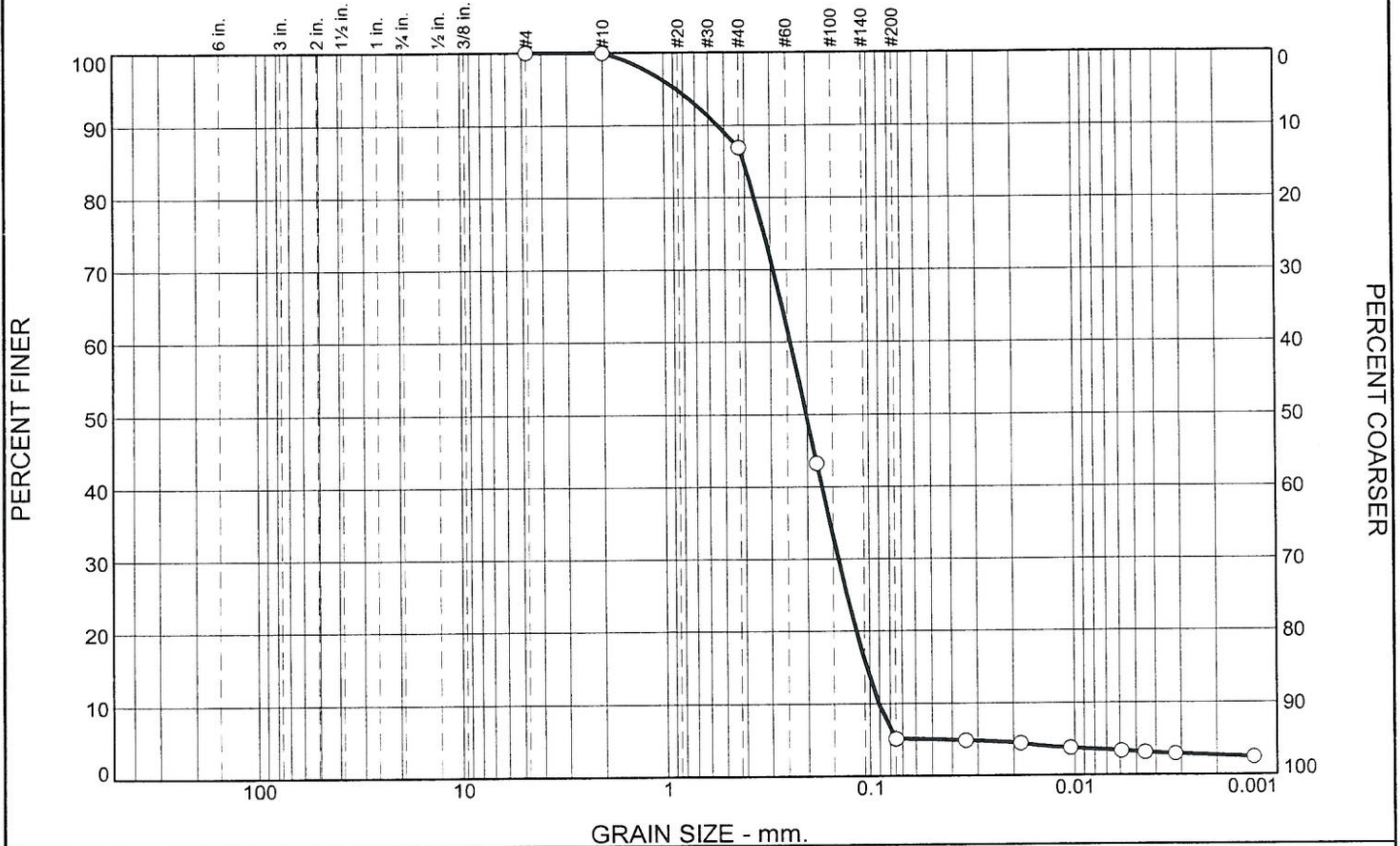
HYDROMETER (minus no.4 material)

sample size 274.97 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10		.74		
40		79.76		
200	90	235.25 269.26		

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (R _i)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)
1112								
2	9							
5	25							
15								
30	20							
60	8							
90								
120	7							
240								
1440	100							

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	13.1	81.8	1.9	3.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#40	86.9		
#80	43.3		
#200	5.1		

* (no specification provided)

Material Description

Orange Brown fine Sand, little medium Sand, trace Silt and Clay

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.4035 D₆₀= 0.2414 D₅₀= 0.2024
D₃₀= 0.1419 D₁₅= 0.1037 D₁₀= 0.0905
C_u= 2.67 C_c= 0.92

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 12

Depth: 9'-2'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 11

PARTICLE SIZE ANALYSIS
(ASTM D422)

C:D422

PROJ. NO.:	10-1004012	DATE:	5/7/10
SAMPLE NO.:		TECH:	

MATERIAL DESCRIPTION: MC % 6.1

MATERIAL SOURCE: B12 @ 6"-2' MA TAKE 167.66 W407.19 D 393.43

SIEVE ANALYSIS (plus no.4 material) sample size 225.789 gms

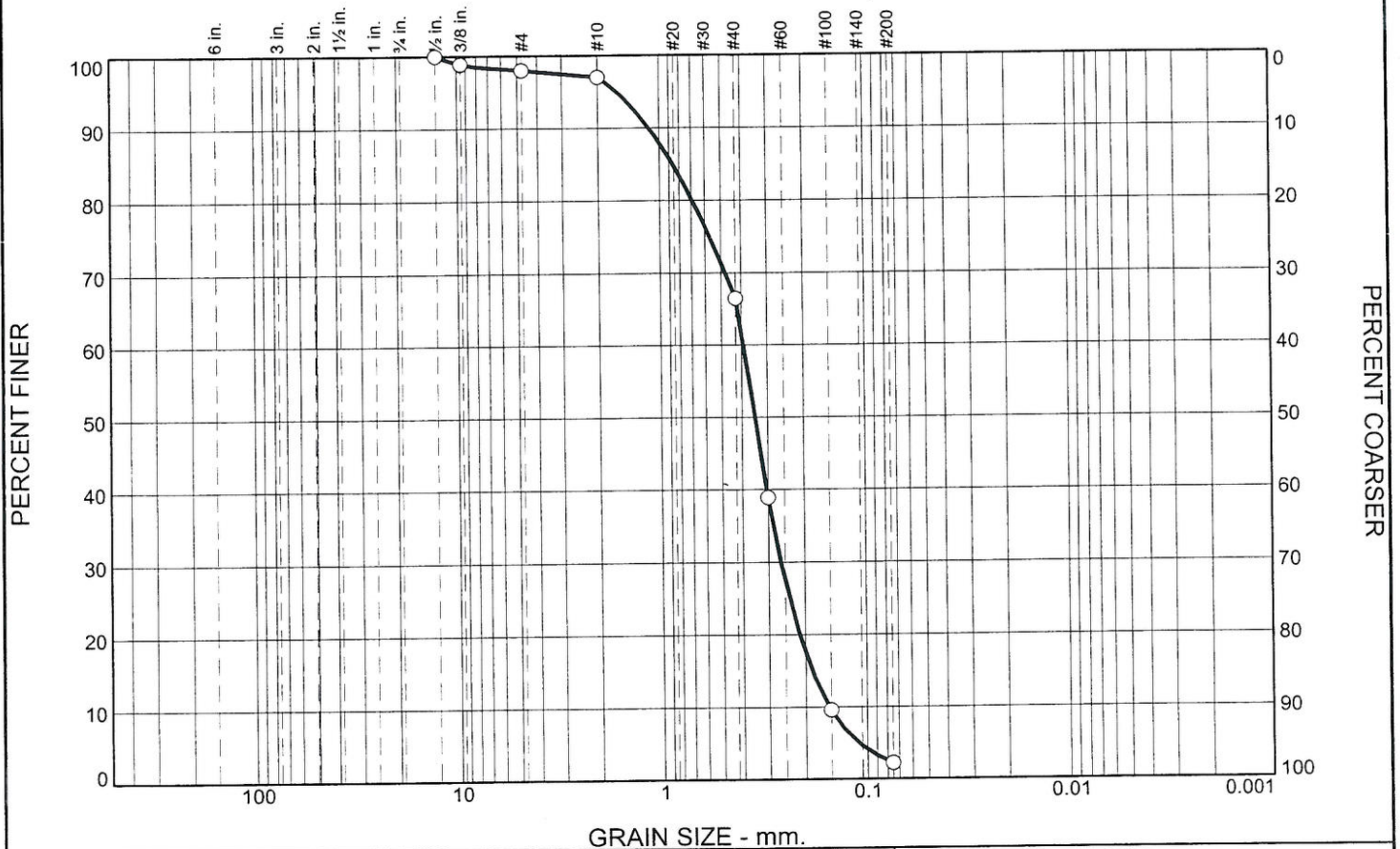
sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4				
1/2				
3/8				
4		0		

HYDROMETER (minus no.4 material) sample size 225.73 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10		0.06		
40		29.48		
200	80	128.06 214.13		

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)	
1105									
2	14.5								
57	13.5								
15	12								
3522	11.0								
6070									
90									
120	10.5								
240	10								
1440	9								

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.0	1.0	30.6	64.2	2.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	98.9		
#4	98.0		
#10	97.0		
#40	66.4		
#50	38.9		
#100	9.6		
#200	2.2		

* (no specification provided)

Material Description

Pale Brown and White fine to medium Sand, trace coarse Sand, Gravel, and Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.8628 D₆₀= 0.3908 D₅₀= 0.3457
D₃₀= 0.2618 D₁₅= 0.1860 D₁₀= 0.1532
C_u= 2.55 C_c= 1.14

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 13

Depth: 6-8'

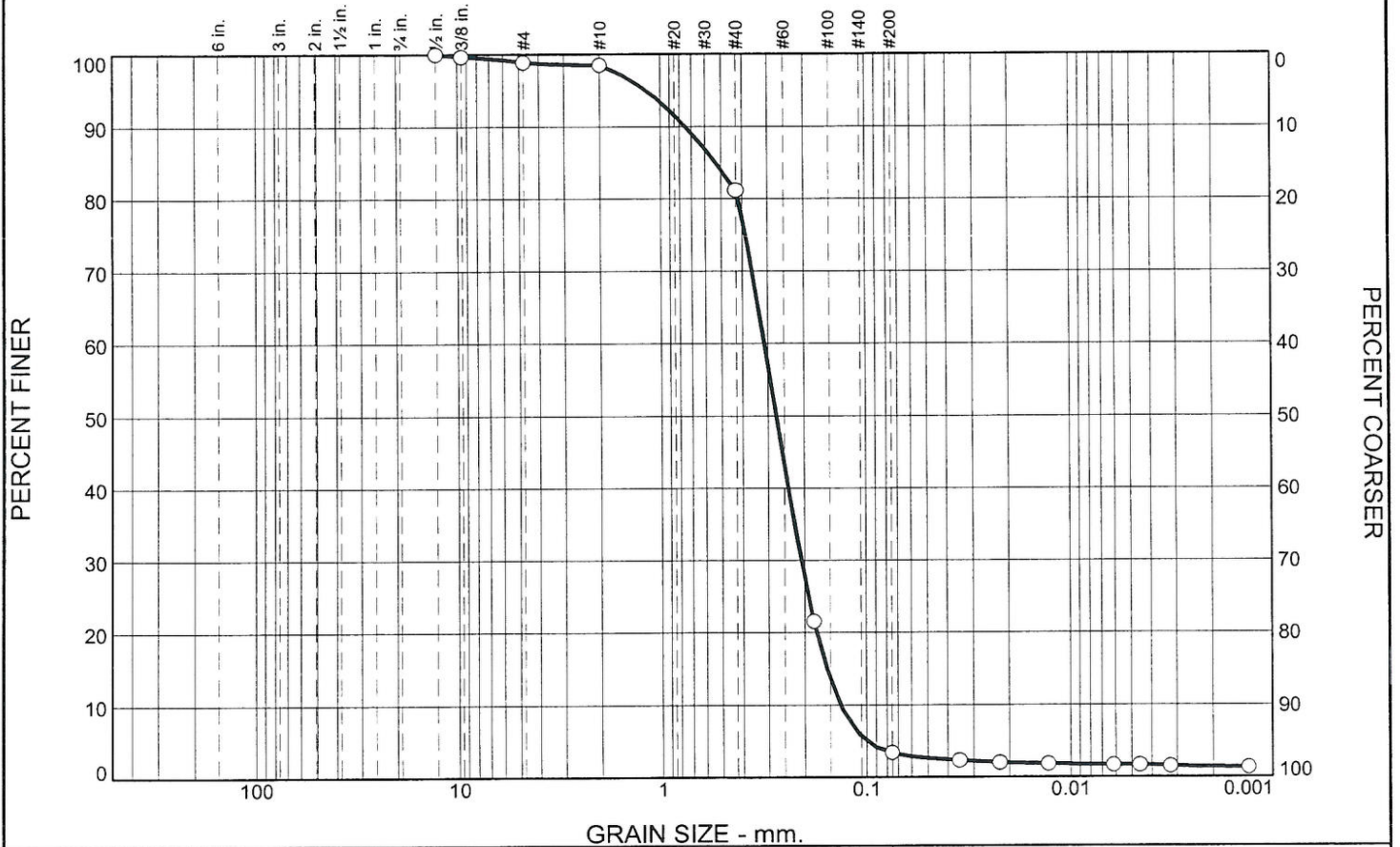
Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 12

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.1	0.4	17.3	77.8	1.7	1.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	99.7		
#4	98.9		
#10	98.5		
#40	81.2		
#80	21.6		
#200	3.4		

* (no specification provided)

Material Description

Pale Brown fine Sand, little medium Sand, trace coarse Sand, Gravel, Silt and Clay

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.5321 D₆₀= 0.3114 D₅₀= 0.2732
D₃₀= 0.2074 D₁₅= 0.1559 D₁₀= 0.1334
C_u= 2.33 C_c= 1.04

Classification

USCS= AASHTO=

Remarks

Source of Sample: Test Boring No. 14

Depth: 6-8'

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 13

PARTICLE SIZE ANALYSIS
(ASTM D422)

C:D422

AME:	PROJ. NO.: 10-1004012	DATE: 5/7/10
	SAMPLE NO.:	TECH:

MATERIAL DESCRIPTION: _____ M.C.% 17.8

MATERIAL SOURCE: B14 @ 6-8' M Q TARE 149.32 W 506.74 D 452.70

SIEVE ANALYSIS (plus no.4 material) sample size 302.83 gms

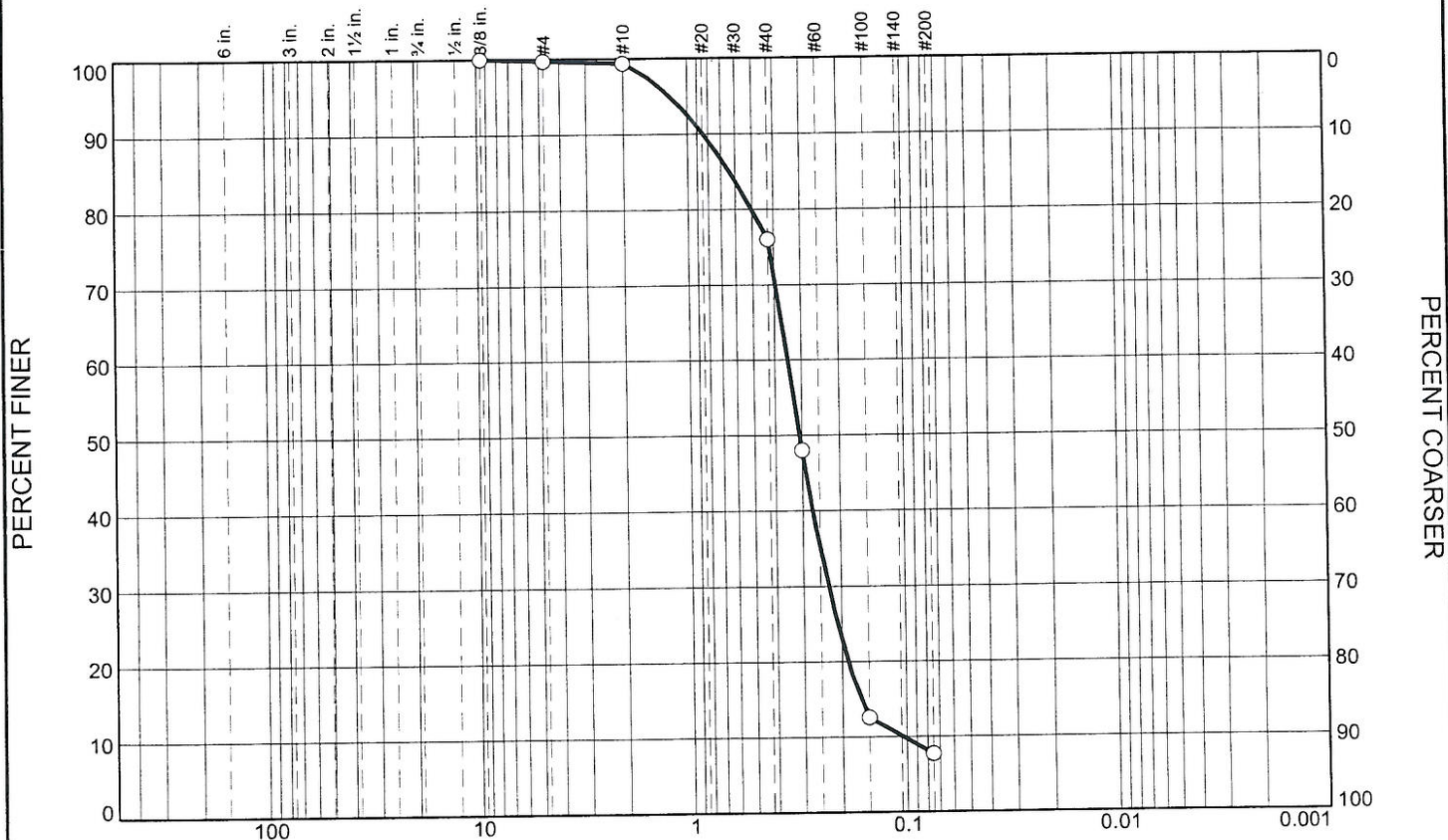
sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
1				
3/4		0		
1/2		98 0		
3/8		344.98		
4		455 344		

HYDROMETER (minus no.4 material) sample size 298.28 gms

sieve size	CUM. WT. RETAINED	WT. RETAINED	% RETAINED	%PASSING
10		4.55		
40		52.52		
200	80	232.98 287.96		

TIME	HYDROM. READ. (R)	TEMP. READ. (T)	Cm FACTOR (Cm)	CORR. READ. (Ri)	L FACTOR (L)	K FACTOR (K)	PART. DIA. (mm)	% FINER (%)	-6.5
1045									
2	11 10.105								
5	8.5								
15	9								
30									
60	7.5								
90									
120	8.5								
240	8								
1440	7.15								

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.3	23.4	68.3	7.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.7		
#10	99.4		
#40	76.0		
#50	48.0		
#100	12.6		
#200	7.7		

* (no specification provided)

Material Description
Brown/Dark Brown fine to medium Sand, trace Silt, trace to little Organic Matter

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₈₅= 0.6390 D₆₀= 0.3474 D₅₀= 0.3077
 D₃₀= 0.2299 D₁₅= 0.1636 D₁₀= 0.1037
 C_u= 3.35 C_c= 1.47

Classification
 USCS= AASHTO=

Remarks

Sample Number: S10198
Location: Bulk Sample from B-5

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 14

WASHED SIEVE ANALYSIS TEST DATA SHEET
(ASTM C136)

Project Name:	Project Number: ID-100 4012	
Technician:	Date:	Lab No. 198
Material Description:		Date Received:
Sample Source: BULK SAMPLE B-5 M11 M.C.% 11.9		

WASHED SIEVE ANALYSIS

Sample + Tare 854.14 - Tare 219.18 = Sample 634.96 g

sieve size	weight retained	cum. weight retained	cumulative percent retained	total percent passing	specification
3"					
75mm					
2 1/2"					
62.5mm					
2"					
50mm					
1 1/2"					
37.5mm					
1"					
25mm					
3/4"					
19mm					
1/2"					
12.5mm					
3/8"		0			
9.5mm					
#4		1.88			
4.75mm					
#8/10		3.88			
2.36/2.0 mm					
#16 / 20					
1.18/0.60mm					
#30 / 40		152.37			
0.60/0.425mm					
#50		330.21			
0.300mm					
#100		555.04			
0.150mm					
#200		595.90			
0.075mm					

Sample Size: Maximum Particle Size

1" - 10,000gm

1/2" - 5,000gm

#4 - 1,000gm

Moisture Content

TEST # 198

(A) Tare + Wet Soil Weight = 929.6

(B) Tare + Dry Soil Weight = 854.27

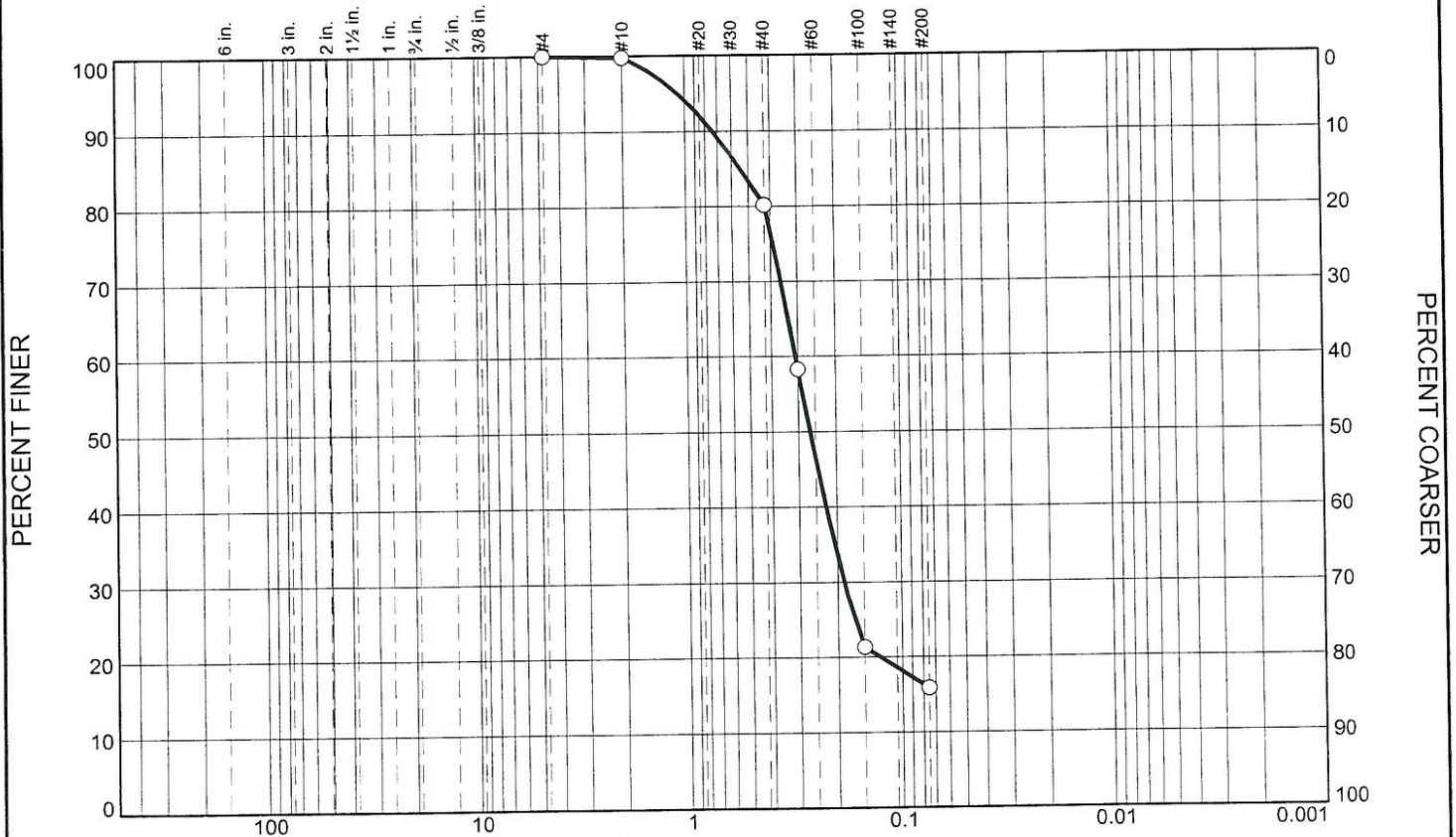
(C) Tare Weight = 219.1

(D) Moisture Content (A-B) / (B-C) = 11.9

test 1%
st 0.1%

.MS/Sieveform

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	19.6	64.3	15.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.8		
#40	80.2		
#50	58.2		
#100	21.4		
#200	15.9		

* (no specification provided)

Material Description

Dark Brown fine to medium Sand, little Silt, trace Organic Matter

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.5453 D₆₀= 0.3080 D₅₀= 0.2646
D₃₀= 0.1868 D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample Number: S10199
Location: Bulk Sample from B-6

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 15

WASHED SIEVE ANALYSIS TEST DATA SHEET
(ASTM C136)

Project Name:	Project Number: ID-1004012	
Technician:	Date:	Lab No. S10199
Material Description:	Date Received:	
Sample Source: BULK SAMPLE B-6	M.C. % 12.1	

WASHED SIEVE ANALYSIS					LM 164
Sample + Tare		265.06	- Tare	213.78	= Sample 51.28 g
sieve size	weight retained	cum. weight retained	cumulative percent retained	total percent passing	specification
3"					
75mm					
2 1/2"					
62.5mm					
2"					
50mm					
1 1/2"					
37.5mm					
1"					
25mm					
3/4"					
19mm					
1/2"					
12.5mm					
3/8"					
9.5mm					
#4					
4.75mm		0			
#8/10					
2.36/2.0 mm		0			
#16 / 20					
1.18/0.60mm	F40	10.17			
#30 / 40					
0.60/0.425mm	A50	21.41			
#50					
0.300mm		4			
#100					
0.150mm		40.33			
#200					
0.075mm		43.15			

Sample Size: Maximum Particle Size

1" - 10,000gm
1/2" - 5,000gm
#4 - 1,000gm

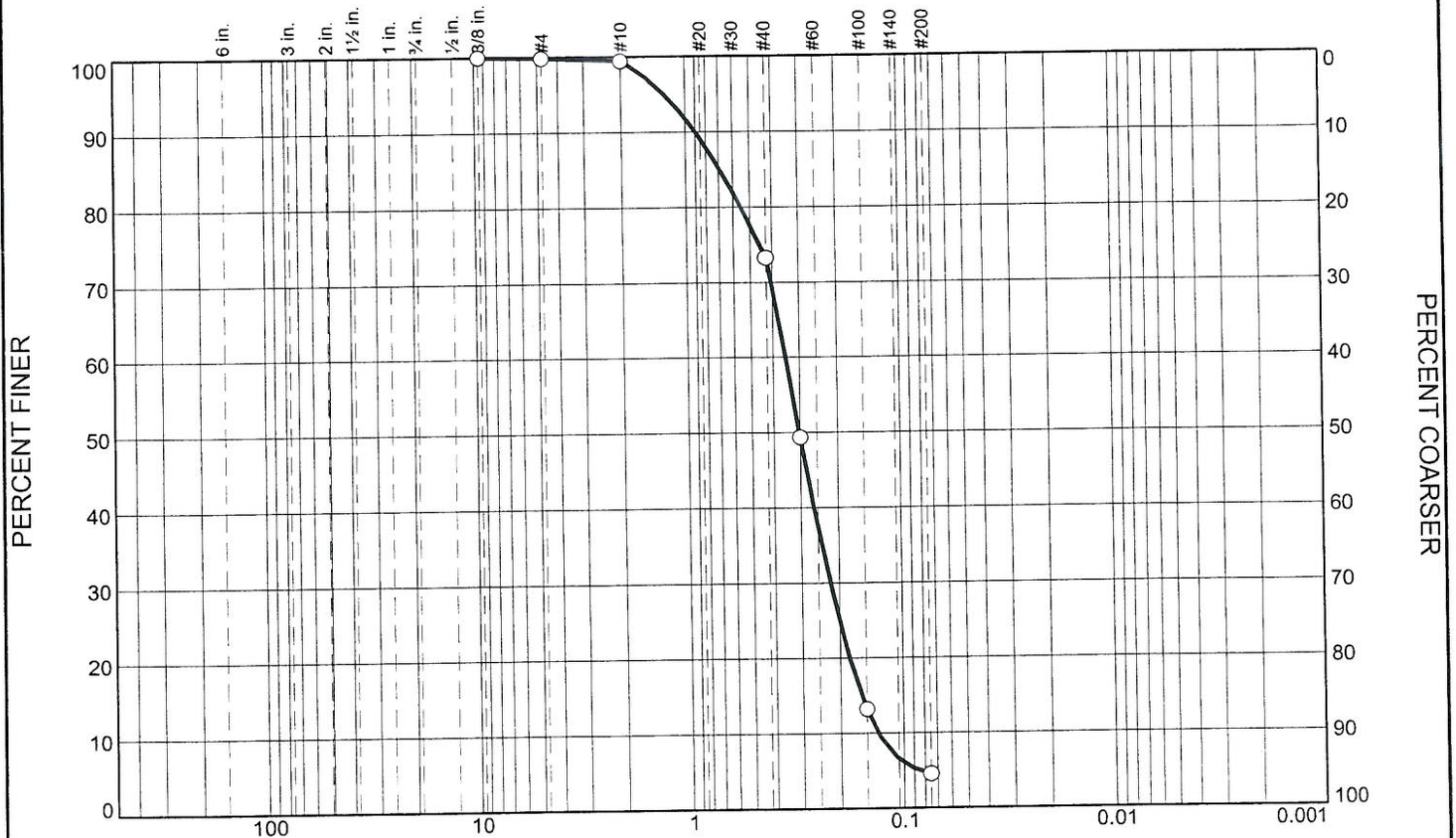
Moisture Content TEST # 199

- (A) Tare + Wet Soil Weight = 898.1
- (B) Tare + Dry Soil Weight = 824.09
- (C) Tare Weight = 211.3
- (D) Moisture Content (A-B) / (B-C) = 12.1

41%
0.1%

VS/Sieveform

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.4	26.1	68.7	4.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.8		
#10	99.4		
#40	73.3		
#50	49.3		
#100	13.2		
#200	4.6		

* (no specification provided)

Material Description

Brown/Dark Brown fine to medium Sand, trace Silt and Organic Matter

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.6909 D₆₀= 0.3487 D₅₀= 0.3030
D₃₀= 0.2208 D₁₅= 0.1587 D₁₀= 0.1324
C_u= 2.63 C_c= 1.06

Classification

USCS= AASHTO=

Remarks

Sample Number: S10200
Location: Bulk Sample from B-9

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 16

WASHED SIEVE ANALYSIS TEST DATA SHEET
(ASTM C136)

Project Name:	Project Number: 10-1004012	
Technician:	Date:	Lab No. 200
Material Description:	Date Received:	
Sample Source:	BULK SAMPLE B-9 LM12 M.C. % 6.9	

WASHED SIEVE ANALYSIS

Sample + Tare 592.03 - Tare 172.98 = Sample 419.05 g

sieve size	weight retained	cum. weight retained	cumulative percent retained	total percent passing	specification
3"					
75mm					
2 1/2"					
62.5mm					
2"					
50mm					
1 1/2"					
37.5mm					
1"					
25mm					
3/4"					
19mm					
1/2"					
12.5mm					
3/8"					
9.5mm		0			
#4					
4.75mm		0.75			
#8/10					
2.36/2.0 mm		2.39			
#16 / 20					
1.18/0.60mm					
#30 / 40					
0.60/0.425mm		111.96			
#50					
0.300mm		212.39			
#100					
0.150mm		363.77			
#200					
0.075mm		399.91			

Sample Size: Maximum Particle Size

1" - 10,000gm

1/2" - 5,000gm

#4 - 1,000gm

Moisture Content TEST # 200

(A) Tare + Wet Soil Weight = 621.0

(B) Tare + Dry Soil Weight = 592.05

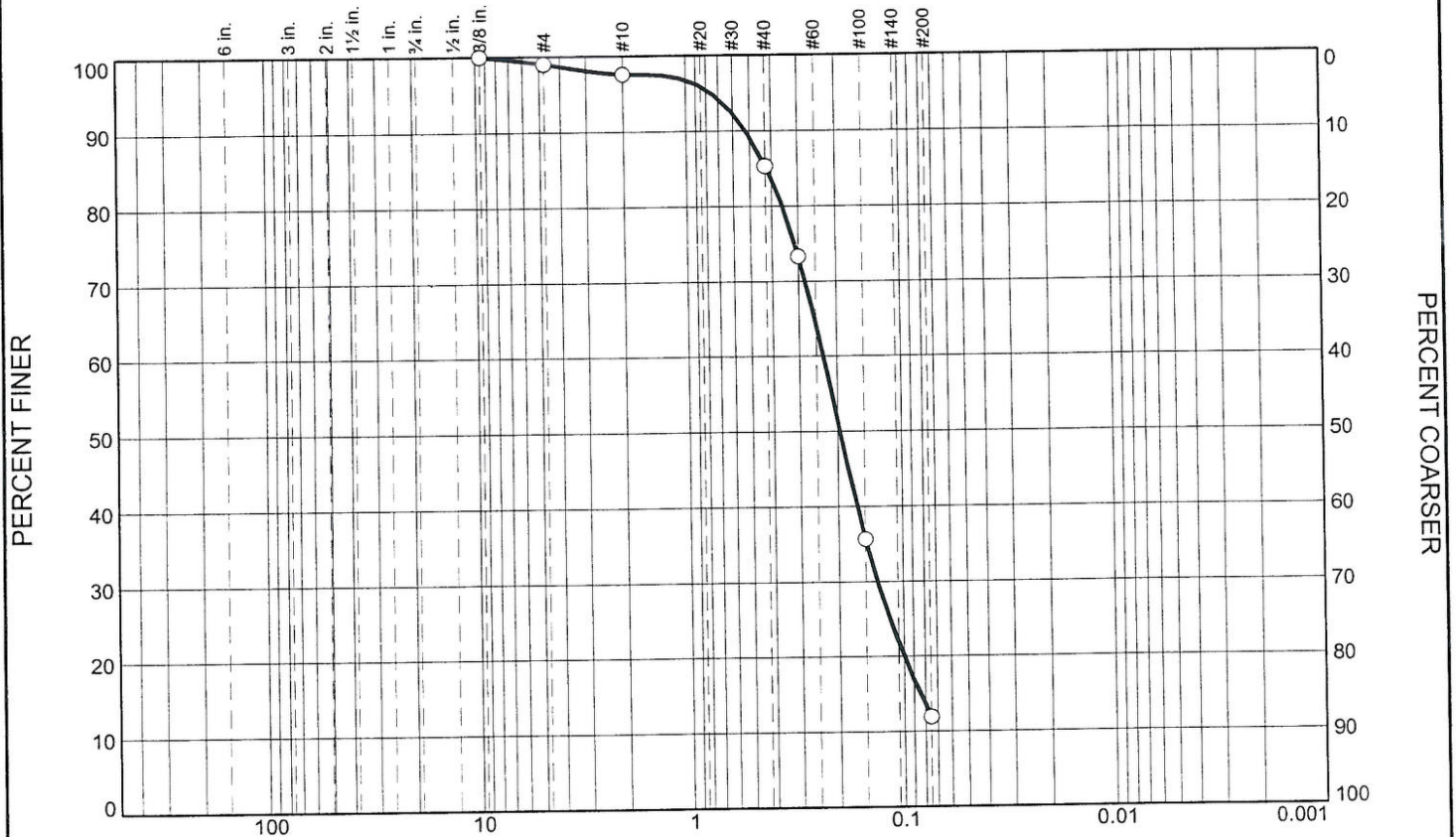
(C) Tare Weight = 172.9

(D) Moisture Content (A-B) / (B-C) = 6.9

1%
0.1%

1S/Sieveform

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	1.4	12.3	73.4	11.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.0		
#10	97.6		
#40	85.3		
#50	73.3		
#100	35.6		
#200	11.9		

* (no specification provided)

Material Description

Brown fine Sand, little medium Sand and Silt, trace coarse Sand, Gravel and Organic Matter

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₈₅= 0.4196

D₆₀= 0.2323

D₅₀= 0.1955

D₃₀= 0.1323

D₁₅= 0.0840

D₁₀=

C_u=

C_c=

Classification

USCS=

AASHTO=

Remarks

Sample Number: S10201
Location: Bulk Sample from B-12

Date: 5-14-10

GILES
ENGINEERING ASSOC., INC.
Waukesha, Wisconsin

Client: CorpVet, LLC
Project: Contract Drill
Fort McCoy, Wisconsin
Project No: 1D-1004012

Figure 17

WASHED SIEVE ANALYSIS TEST DATA SHEET
(ASTM C136)

Project Name:	Project Number: 10-1004012	
Technician:	Date:	Lab No. 201
Material Description:		Date Received:
Sample Source: BULK SAMPLE B-12 LM9		

WASHED SIEVE ANALYSIS

Sample + Tare 411.96 - Tare 219.80 = Sample 192.16 g

sieve size	weight retained	cum. weight retained	cumulative percent retained	total percent passing	specification
3"					
75mm					
2 1/2"					
62.5mm					
2"					
50mm					
1 1/2"					
37.5mm					
1"					
25mm					
3/4"					
19mm					
1/2"					
12.5mm					
3/8"					
9.5mm		0			
#4					
4.75mm		1.94			
#8/10					
2.36/2.0 mm		4.64			
#16 / 20					
1.18/0.60mm					
#30 / 40					
0.60/0.425mm		28.18			
#50					
0.300mm		51.30			
#100					
0.150mm		123.70			
#200					
0.075mm		169.32			

Sample Size: Maximum Particle Size

1" - 10,000gm
1/2" - 5,000gm
#4 - 1,000gm

Sieve Analysis dry @ 110c, weight to 0.1gm, report to nearest 1%
Washed sieve dry @ 110c, weight to 0.01gm, report to nearest 0.1%

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N8 W22350 JOHNSON DRIVE, SUITE A1 /WAUKESHA, WI 53186 / (262) 544-0118 / FAX: (262) 549-5868

Report Of California Bearing Ratio

Client: CorpVet, LLC
Milwaukee, Wisconsin

Project: Contract Drill
Fort McCoy, Wisconsin

Date: May 14, 2010

Project No.: 1D-1004012

Figure No.: 18

Lab No.: S10198

Material Description: Brown/Dark Brown fine to medium Sand, trace Silt, trace to little Organic Matter

Sample Source: Bulk Sample from B5

Material Properties

Nat. Moisture:

Liquid Limit:

% ret.#4 sieve:

USCS:

Max. Dry Density: 119.2

Specific Gravity

Plasticity Index:

% pass. #200 sieve:

AASTHO

Opt Moisture 8.4

CBR Test, ASTM D1883

Dry Density: 115.5

% Compaction: 96.9

Surcharge Load: 10lbs.

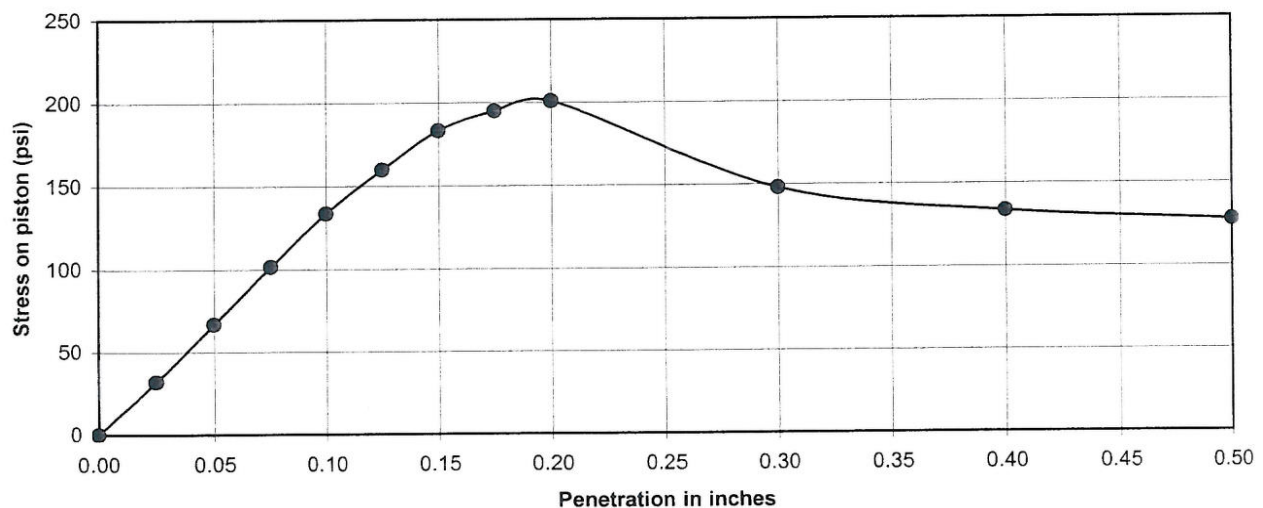
Soaked CBR Value: 13.3

Initial Moisture: 9.0

Final Moisture: 11.7

Soak Time: hrs.

Percent Swell: 0.0



CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

SWELL TEST

SOAK START DATE			INITIAL READING*		
1	2	3	1	2	3
SOAK COMPLETION DATE			FINAL READING		
1	2	3	1	2	3
TOTAL SOAK TIME			INITIAL HEIGHT		
1	2	3	1	2	3
*AASHTO before immersion; ASTM after immersion			PERCENT SWELL		
			1	2	3

SOAKED CBR TEST

WET WT		
1 9378	2 1516	3 C
DRY WT		
1 855.6	2	3
MOISTURE		
1	2	3

PENETRATION

DATE		
1	2	3
SURCHARGE LOAD		
1	2	3
LOAD RATE		
1	2	3

PLACE ONLY ONE 5-lb SURCHARGE WEIGHT BEFORE SEATING PISTON WITH A 10-lb LOAD.
PLACE REMAINING SURCHARGE AFTER SEATING

PENETRATION READINGS

1	DEPTH (inches)	LOAD READING
	0.000	
	0.025	10
	0.050	22
	0.075	39
	0.100	45
	0.125	54
	0.150	62
	0.175	63
	0.200	66
	0.300	70
	0.400	45
	0.500	45

2	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	
	0.075	
	0.100	
	0.125	
	0.150	
	0.175	
	0.200	
	0.300	
	0.400	
	0.500	

3	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	
	0.075	
	0.100	
	0.125	
	0.150	
	0.175	
	0.200	
	0.300	
	0.400	
	0.500	

RECORDED PISTON DEPTH VERIFIED BY RULER? (REQUIRED IF ASTM METHOD USED) ☐

CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

MOLD (2)

PROJECT NAME	PROJECT NO.	LAB NO. 198
LAB TECHNICIAN		DATE

IDENTIFICATION

MATERIAL DESCRIPTION
SAMPLE SOURCE

MATERIAL PROPERTIES

MaxDD 119.2	OMC 8.4
-----------------------	-------------------

SAMPLE PREPARATION

1 MOISTURE CONTENT, MC	
WET WT	
DRY WT	
$MC = [(WET - DRY) / DRY] * 100$	

2 WT OF DRY SOIL REQ'D, $WD = [(MaxDD * \%Comp) / MOLD VOL] * 453.6$	
--	--

3 WT OF PROCESSED SOIL REQ'D = $WD * [1 + (MC / 100)]$	
--	--

4 WT OF WATER REQUIRED = $WD * [(OMC - MC) / 100]$	
--	--

5 MOISTURE/DENSITY CHECK					
MOLD & SOIL WT			# OF BLOWS / LAYER		
1	2	3	1	2	3
8465.4					
MOLD WT			WET WT		
1	2	3	1	2	3
4207.6					
SOIL WT			DRY WT		
1	2	3	1	2	3
DENSITY			MOISTURE		
1	2	3	1	2	3
125.1					
$DD = [DENSITY / (1 + MC)]$					
1	2	3			
115.5					
$\%COMPACTION = (DD / MaxDD) * 100$					
1	2	3			
96.9					

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N8 W22350 JOHNSON DRIVE, SUITE A1 /WAUKESHA, WI 53186 / (262) 544-0118 / FAX: (262) 549-5868

Report Of California Bearing Ratio

Client: CorpVet, LLC
Milwaukee, Wisconsin

Project: Contract Drill
Fort McCoy, Wisconsin

Date: May 14, 2010

Project No.: 1D-1004012

Figure No.: 19

Lab No.: S10199

Material Description: Dark Brown fine to medium Sand, little Silt, trace Organic Matter

Sample Source: Bulk Sample from B6

Material Properties

Nat. Moisture:

Liquid Limit:

% ret.#4 sieve:

USCS:

Max. Dry Density: 119.5

Specific Gravity

Plasticity Index:

% pass. #200 sieve:

AASTHO

Opt Moisture 11.6

CBR Test, ASTM D1883

Dry Density: 112.7

% Compaction: 94.3

Surcharge Load: 10lbs.

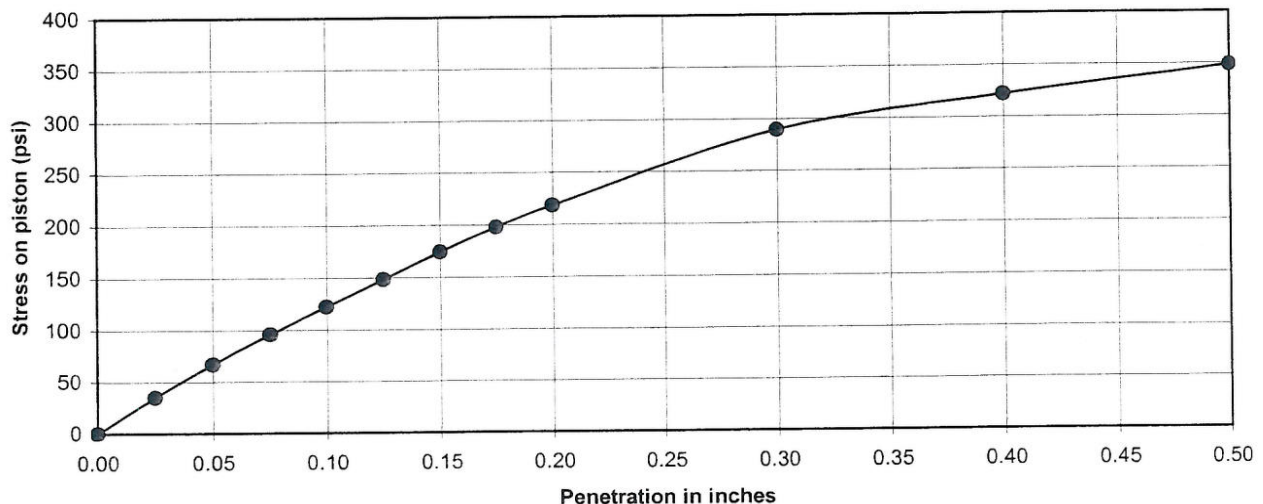
Soaked CBR Value: 12.2

Initial Moisture: 12.0

Final Moisture: 14.4

Soak Time: hrs.

Percent Swell: 0.0



CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

MOLD (4)

PROJECT NAME	PROJECT NO.	LAB NO. <div align="center"><i>199</i></div>
LAB TECHNICIAN		DATE

IDENTIFICATION

MATERIAL DESCRIPTION

SAMPLE SOURCE

MATERIAL PROPERTIES

MaxDD <div align="center"><i>119.5</i></div>	OMC <div align="center"><i>11.6</i></div>
---	--

SAMPLE PREPARATION

1 MOISTURE CONTENT, MC

WET WT
DRY WT
MC = [(WET - DRY) / DRY] * 100

2 WT OF DRY SOIL REQ'D, WD = [(MaxDD * %Comp) / MOLD VOL] * 453.6

3 WT OF PROCESSED SOIL REQ'D = WD * [1 + (MC / 100)]

4 WT OF WATER REQUIRED = WD * [(OMC - MC) / 100]

5 MOISTURE/DENSITY CHECK

MOLD & SOIL WT			# OF BLOWS / LAYER		
1	2	3	1	2	3
<i>8681.7</i>					
MOLD WT			WET WT		
1	2	3	1	2	3
<i>4364.4</i>					
SOIL WT			DRY WT		
1	2	3	1	2	3
DENSITY			MOISTURE		
1	2	3	1	2	3
<i>125.7</i>					
DD = [DENSITY / (1 + MC)]					
1	2	3			
<i>112.7</i>					
%COMPACTION = (DD / MaxDD) * 100					
1	2	3			
<i>94.3</i>					

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N8 W22350 JOHNSON DRIVE, SUITE A1 /WAUKESHA, WI 53186 / (262) 544-0118 / FAX: (262) 549-5868

Report Of California Bearing Ratio

Client: CorpVet, LLC
Milwaukee, Wisconsin

Project: Contract Drill
Fort McCoy, Wisconsin

Date: May 14, 2010

Project No.: 1D-1004012

Figure No.: 20

Lab No.: S10200

Material Description: Brown/Dark Brown fine to medium Sand, trace Silt and Organic Matter

Sample Source: Bulk Sample from B9

Material Properties

Nat. Moisture:

Liquid Limit:

% ret.#4 sieve:

USCS:

Max. Dry Density: 118.3

Specific Gravity

Plasticity Index:

% pass. #200 sieve:

AASTHO

Opt Moisture 8.1

CBR Test, ASTM D1883

Dry Density: 116.6

% Compaction: 98.6

Surcharge Load: 10lbs.

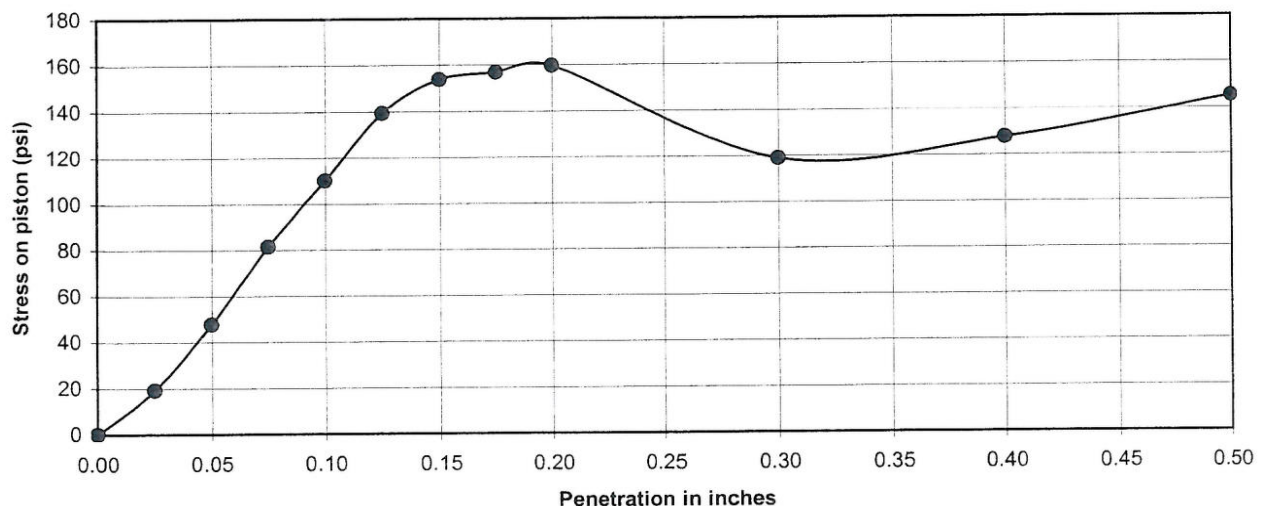
Soaked CBR Value: 11.0

Initial Moisture: 15.3

Final Moisture: 10.7

Soak Time: hrs.

Percent Swell: 0.0



CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

SWELL TEST

SOAK START DATE			INITIAL READING*		
1	2	3	1	2	3
SOAK COMPLETION DATE			FINAL READING		
1	2	3	1	2	3
TOTAL SOAK TIME			INITIAL HEIGHT		
1	2	3	1	2	3
*AASHTO before immersion; ASTM after immersion			PERCENT SWELL		
			1	2	3

SOAKED CBR TEST

WET WT		
1	2	3
1009.5	1492.4	1000
DRY WT		
1	2	3
926.5		
MOISTURE		
1	2	3
10.7		

PENETRATION

DATE		
1	2	3
SURCHARGE LOAD		
1	2	3
LOAD RATE		
1	2	3

PENETRATION READINGS

PLACE ONLY ONE 5-lb SURCHARGE WEIGHT BEFORE SEATING PISTON WITH A 10-lb LOAD.
PLACE REMAINING SURCHARGE AFTER SEATING.

1	DEPTH (inches)	LOAD READING
	0.000	
	0.025	6
	0.050	15
	0.075	27
	0.100	38
	0.125	47
	0.150	52
	0.175	52
	0.200	50
	0.300	40
	0.400	43
	0.500	49

2	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	
	0.075	
	0.100	
	0.125	
	0.150	
	0.175	
	0.200	
	0.300	
	0.400	
	0.500	

3	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	
	0.075	
	0.100	
	0.125	
	0.150	
	0.175	
	0.200	
	0.300	
	0.400	
	0.500	

RECORDED PISTON DEPTH VERIFIED BY RULER? (REQUIRED IF ASTM METHOD USED) ☐

CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

MOLD 6

PROJECT NAME	PROJECT NO.	LAB NO. <i>200</i>
LAB TECHNICIAN		DATE

IDENTIFICATION

MATERIAL DESCRIPTION
SAMPLE SOURCE

MATERIAL PROPERTIES

MaxDD <i>118.3</i>	OMC <i>8.1</i>
-----------------------	-------------------

SAMPLE PREPARATION

1 MOISTURE CONTENT, MC					
WET WT					
DRY WT					
MC = [(WET - DRY) / DRY] * 100					
2 WT OF DRY SOIL REQ'D, WD = [(MaxDD * %Comp) / MOLD VOL] * 453.6					
3 WT OF PROCESSED SOIL REQ'D = WD * [1 + (MC / 100)]					
4 WT OF WATER REQUIRED = WD * [(OMC - MC) / 100]					
5 MOISTURE/DENSITY CHECK					
MOLD & SOIL WT			# OF BLOWS / LAYER		
1 <i>8450.8</i>	2	3	1	2	3
MOLD WT			WET WT		
1 <i>4162.1</i>	2	3	1	2	3
SOIL WT			DRY WT		
1	2	3	1	2	3
DENSITY			MOISTURE		
1 <i>126.1</i>	2	3	1	2	3
DD = [DENSITY / (1 + MC)]					
1 <i>116.6</i>	2	3			
%COMPACTION = (DD / MaxDD) * 100					
1 <i>98.6</i>	2	3			

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-GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS-

N8 W22350 JOHNSON DRIVE, SUITE A1 /WAUKESHA, WI 53186 / (262) 544-0118 / FAX: (262) 549-5868

Report Of California Bearing Ratio

Client: CorpVet, LLC
Milwaukee, Wisconsin

Project: Contract Drill
Fort McCoy, Wisconsin

Date: May 14, 2010

Project No.: 1D-1004012

Figure No.: 21

Lab No.: S10201

Material Description: Brown fine Sand, little medium Sand and Silt, trace coarse Sand, Gravel and Organic Matter

Sample Source: Bulk Sample from B12

Material Properties

Nat. Moisture:

Liquid Limit:

% ret.#4 sieve:

USCS:

Max. Dry Density: 117.7

Specific Gravity

Plasticity Index:

% pass. #200 sieve:

AASTHO

Opt Moisture 9.4

CBR Test, ASTM D1883

Dry Density: 115.5

% Compaction: 98.1

Surcharge Load: 10lbs.

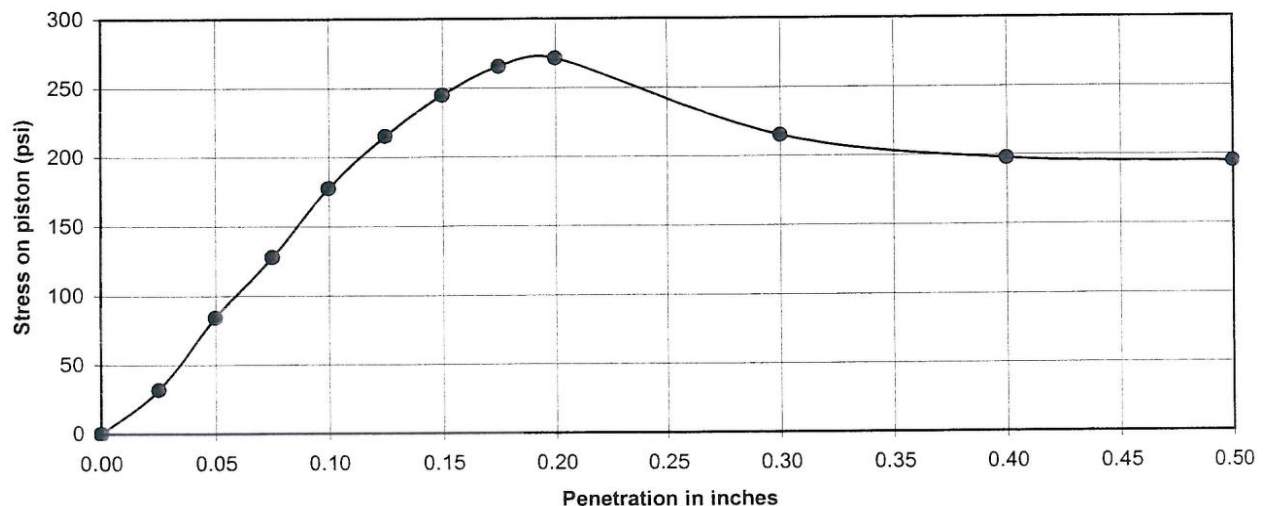
Soaked CBR Value: 17.7

Initial Moisture: 10.1

Final Moisture: 12.5

Soak Time: hrs.

Percent Swell: 0.0



CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

SWELL TEST

SOAK START DATE			INITIAL READING*		
1	2	3	1	2	3
SOAK COMPLETION DATE			FINAL READING		
1	2	3	1	2	3
TOTAL SOAK TIME			INITIAL HEIGHT		
1	2	3	1	2	3
*AASHTO before immersion; ASTM after immersion			PERCENT SWELL		
			1	2	3

SOAKED CBR TEST

WET WT		
1	2	3
879.4	150.2	- X
DRY WT		
1	2	3
798.1		
MOISTURE		
1	2	3

PENETRATION

DATE		
1	2	3
SURCHARGE LOAD		
1	2	3
LOAD RATE		
1	2	3

PENETRATION READINGS

PLACE ONLY ONE 5-lb SURCHARGE WEIGHT BEFORE SEATING PISTON WITH A 10-lb LOAD.
PLACE REMAINING SURCHARGE AFTER SEATING.

1	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	10
	0.075	28
	0.100	43
	0.125	60
	0.150	73
	0.175	83
	0.200	90
	0.225	92
	0.250	73
	0.275	
	0.300	
	0.325	
	0.350	
	0.375	
	0.400	67
	0.425	
	0.450	
	0.475	
	0.500	62

2	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	
	0.075	
	0.100	
	0.125	
	0.150	
	0.175	
	0.200	
	0.225	
	0.250	
	0.275	
	0.300	
	0.325	
	0.350	
	0.375	
	0.400	
	0.425	
	0.450	
	0.475	
	0.500	

3	DEPTH (inches)	LOAD READING
	0.000	
	0.025	
	0.050	
	0.075	
	0.100	
	0.125	
	0.150	
	0.175	
	0.200	
	0.225	
	0.250	
	0.275	
	0.300	
	0.325	
	0.350	
	0.375	
	0.400	
	0.425	
	0.450	
	0.475	
	0.500	

RECORDED PISTON DEPTH VERIFIED BY RULER? (REQUIRED IF ASTM METHOD USED)

☐

CALIFORNIA BEARING RATIO TEST
(ASTM D1883 / AASHTO T193)

MOLD (3)

PROJECT NAME	PROJECT NO.	LAB NO. <i>201</i>
LAB TECHNICIAN		DATE

IDENTIFICATION

MATERIAL DESCRIPTION
SAMPLE SOURCE

MATERIAL PROPERTIES

MaxDD <i>117.7</i>	OMC <i>9.4</i>
-----------------------	-------------------

SAMPLE PREPARATION

1	MOISTURE CONTENT, MC	
	WET WT	
	DRY WT	
	MC = [(WET - DRY) / DRY] * 100	

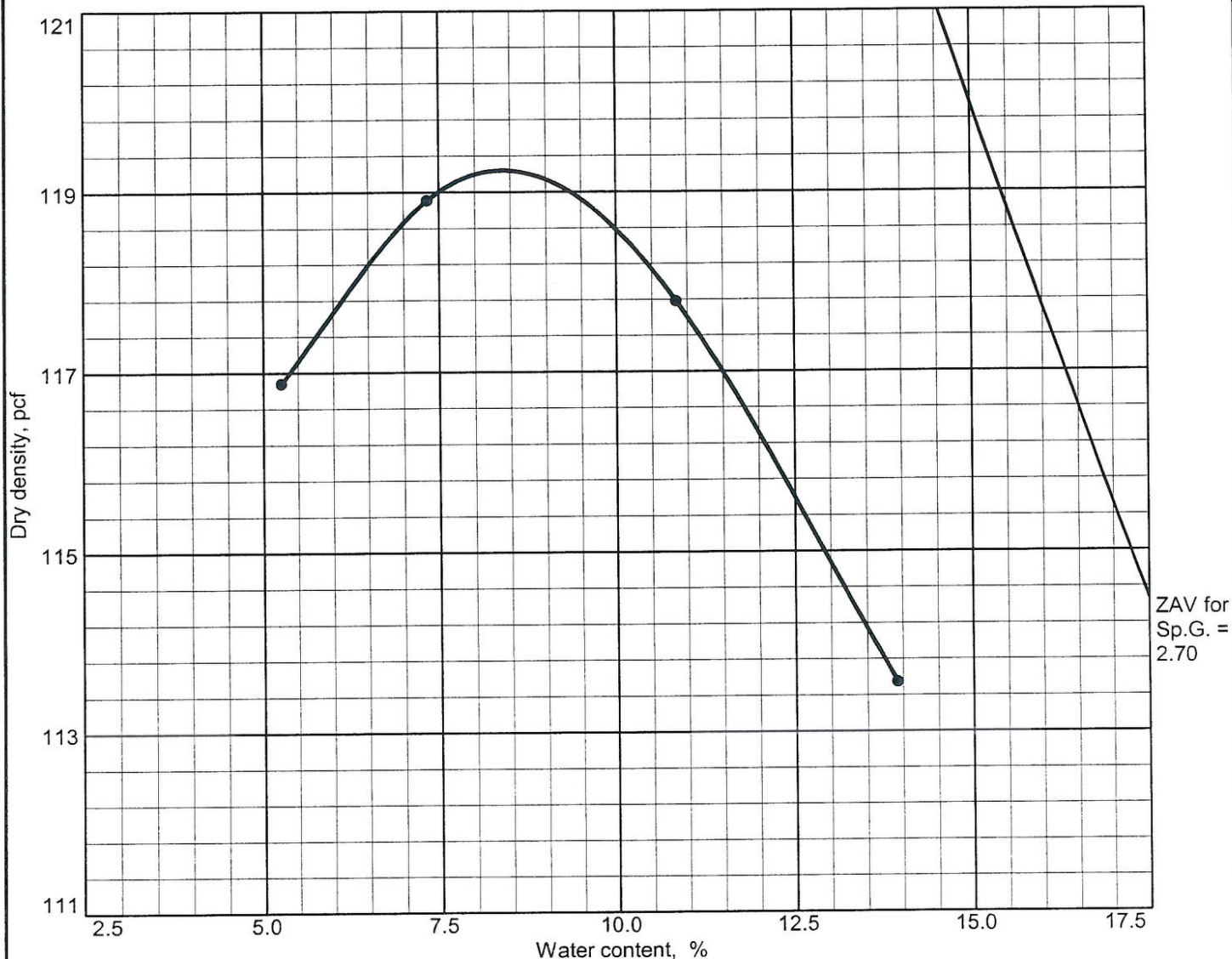
2	WT OF DRY SOIL REQ'D, WD = [(MaxDD * %Comp) / MOLD VOL] * 453.6	
---	---	--

3	WT OF PROCESSED SOIL REQ'D = WD * [1 + (MC / 100)]	
---	--	--

4	WT OF WATER REQUIRED = WD * [(OMC - MC) / 100]	
---	--	--

5 MOISTURE/DENSITY CHECK					
MOLD & SOIL WT			# OF BLOWS / LAYER		
1	2	3	1	2	3
<i>8425.7</i>					
MOLD WT			WET WT		
1	2	3	1	2	3
<i>4126.8</i>					
SOIL WT			DRY WT		
1	2	3	1	2	3
DENSITY			MOISTURE		
1	2	3	1	2	3
<i>126.4</i>					
DD = [DENSITY / (1 + MC)]					
1	2	3			
<i>115.5</i>					
%COMPACTION = (DD / MaxDD) * 100					
1	2	3			
<i>98.1</i>					

MOISTURE-DENSITY RELATIONSHIP TEST REPORT



Test specification: AASHTO T 99 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
				2.70			0.3	7.7

TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 119.2 pcf Optimum moisture = 8.4 %		Brown/Dark Brown fine to medium Sand, trace Silt, trace to little Organic Matter
Project No. 1D-1004012 Client: CorpVet, LLC Project: Contract Drill Fort McCoy, Wisconsin ● Location: Bulk Sample from B-5		Remarks: S10198 5/10/10 Assumed Specific Gravity
GILES ENGINEERING ASSOC., INC. Waukesha, Wisconsin		

Figure 22

MOISTURE DENSITY TEST DATA

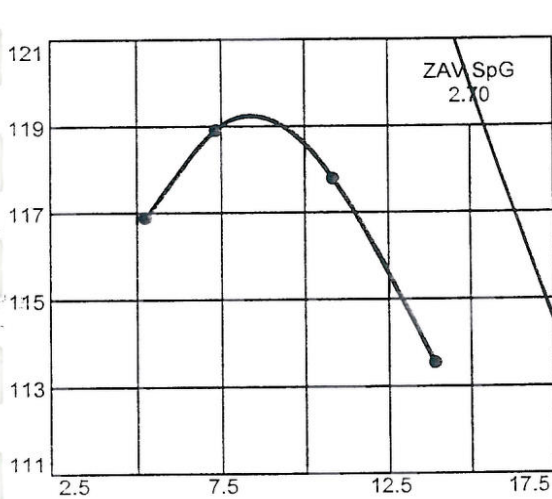
Client:
Project: Fort McCoy Contract Drill
Project Number: 1D-1004012

Specimen Data

Source: On Site
Sample No.: S10198
Elev. or Depth:
Location: On Site, B-5
Description: Brown/Dark Brown fine to medium Sand, trace to little Organics
ASTM Classification:
Natural Moisture: Liquid Limit: Plasticity Index:
Testing Remarks: S10198 5/10/10
Assumed Specific Gravity
Percent retained on No.4 sieve:
Percent passing No. 200 sieve: Specific gravity: 2.70

Test Data And Results

Type of test: ASTM D 1557-07 Method A Modified
Mold Dia.: 4.00 in. Hammer Wt.: 10 lb. Drop: 18 in.
Layers: five Blows per Layer: 25



POINT NO.	1	2	3	4
WM + WS	6173.9	6155.9	6129.7	6060.0
WM	4200.2	4200.2	4200.2	4200.2
WW+T	702.10	810.20	721.90	746.20
WD+T	648.10	729.00	682.90	716.50
TARE	150.00	146.00	151.00	151.10
MOIST	10.8	13.9	7.3	5.3

MOISTURE	10.8	13.9	7.3	5.3
DRY DEN	117.8	113.5	118.9	116.9

Max dry den= 119.2 pcf Opt moisture= 8.4 %

Oversize Correction Not Applied

PROCTOR TEST DATA SHEET

Date: _____ Project No.: _____

Project: _____

Sample No.: 198 Elevation/Depth: _____ Sample Length: _____

Location: _____

Description: _____

Testing Remarks: _____

Curve no.: _____ Type of Test: MOD A

% retained on 2 in. sieve: _____ % retained on # 4 sieve: _____ % passing # 200 sieve: _____
on 3/8": _____ on 3/4": _____

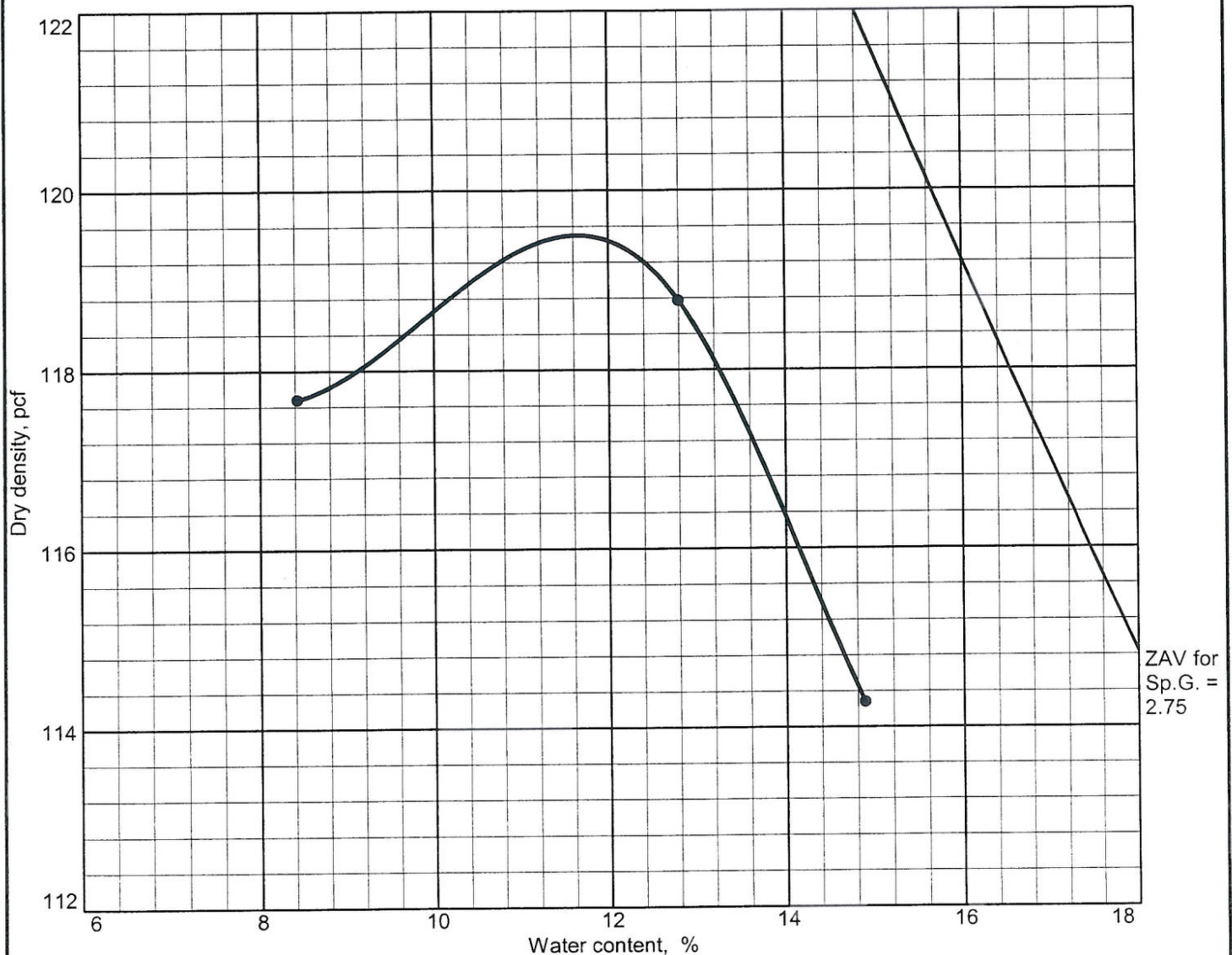
Specific Gravity: _____ Specific Gravity for ZAV Curve: _____ Fig. No.: _____

Specific Gravity of Oversize: _____ Moisture of Oversize: _____

Point No.	1	2	3	4	5	6
Wt Mold + Soil	6173.9	6155.9	6129.7			
Wt Mold	4200.1					
Tare No.						
Wt Wet #1	702.1	810.2	721.9			
Wt Dry #1	648.1	729.0	682.9			
Wt Tare #1	152.0	146.0	151.0			
Moisture #1						
Tare No.						
Wt Wet #2						
Wt Dry #2						
Wt Tare #2						
Moisture #2						
Wet Density						
Avg. % Moisture						
Dry Density						

3135 ~~GET~~
- 235
2900

MOISTURE-DENSITY RELATIONSHIP TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
				2.75			0.0	15.9

TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 119.5 pcf Optimum moisture = 11.6 %		Dark Brown fine to medium Sand, little Silt, trace Organic Matter
Project No. 1D-1004012 Client: CorpVet, LLC Project: Contract Drill Fort McCoy, Wisconsin ● Location: Bulk Sample from B-6		Remarks: S10199 5/10/10 Assumed Specific Gravity
GILES ENGINEERING ASSOC., INC. Waukesha, Wisconsin		

Figure 23

MOISTURE DENSITY TEST DATA

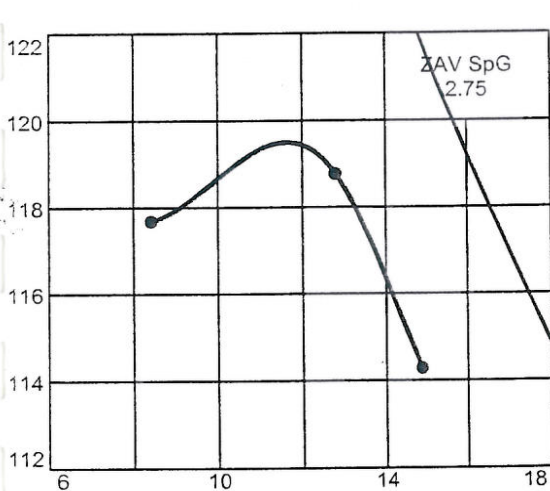
Client:
Project: Fort McCoy Contract Drill
Project Number: 1D-1004012

Specimen Data

Source: On Site
Sample No.: S10199
Elev. or Depth:
Location: On Site, B-6
Description: Dark Brown fine to medium Sand, trace Gravel, trace Organics
USCS Classification: AASHTO Classification:
Natural Moisture: Liquid Limit: Plasticity Index:
Testing Remarks: S10199 5/10/10
Assumed Specific Gravity
Percent retained on No.4 sieve:
Percent passing No. 200 sieve: Specific gravity: 2.75

Test Data And Results

Type of test: ASTM D 1557-07 Method A Modified
Mold Dia.: 4.00 in. Hammer Wt.: 10 lb. Drop: 18 in.
Layers: five Blows per Layer: 25



POINT NO.	1	2	3
WM + WS	6225.6	6185.1	6129.2
WM	4200.2	4200.2	4200.2
WW+T	586.00	628.70	560.00
WD+T	536.40	566.60	528.20
TARE	148.80	149.40	150.80
MOIST	12.8	14.9	8.4

MOISTURE	12.8	14.9	8.4
DRY DEN	118.8	114.3	117.7

Max dry den= 119.5 pcf Opt moisture= 11.6 %
Oversize Correction Not Applied

PROCTOR TEST DATA SHEET

Date: _____ Project No.: _____

Project: _____

Sample No.: 199 Elevation/Depth: _____ Sample Length: _____

Location: _____

Description: _____

Testing Remarks: _____

Curve no.: _____ Type of Test: Mod A

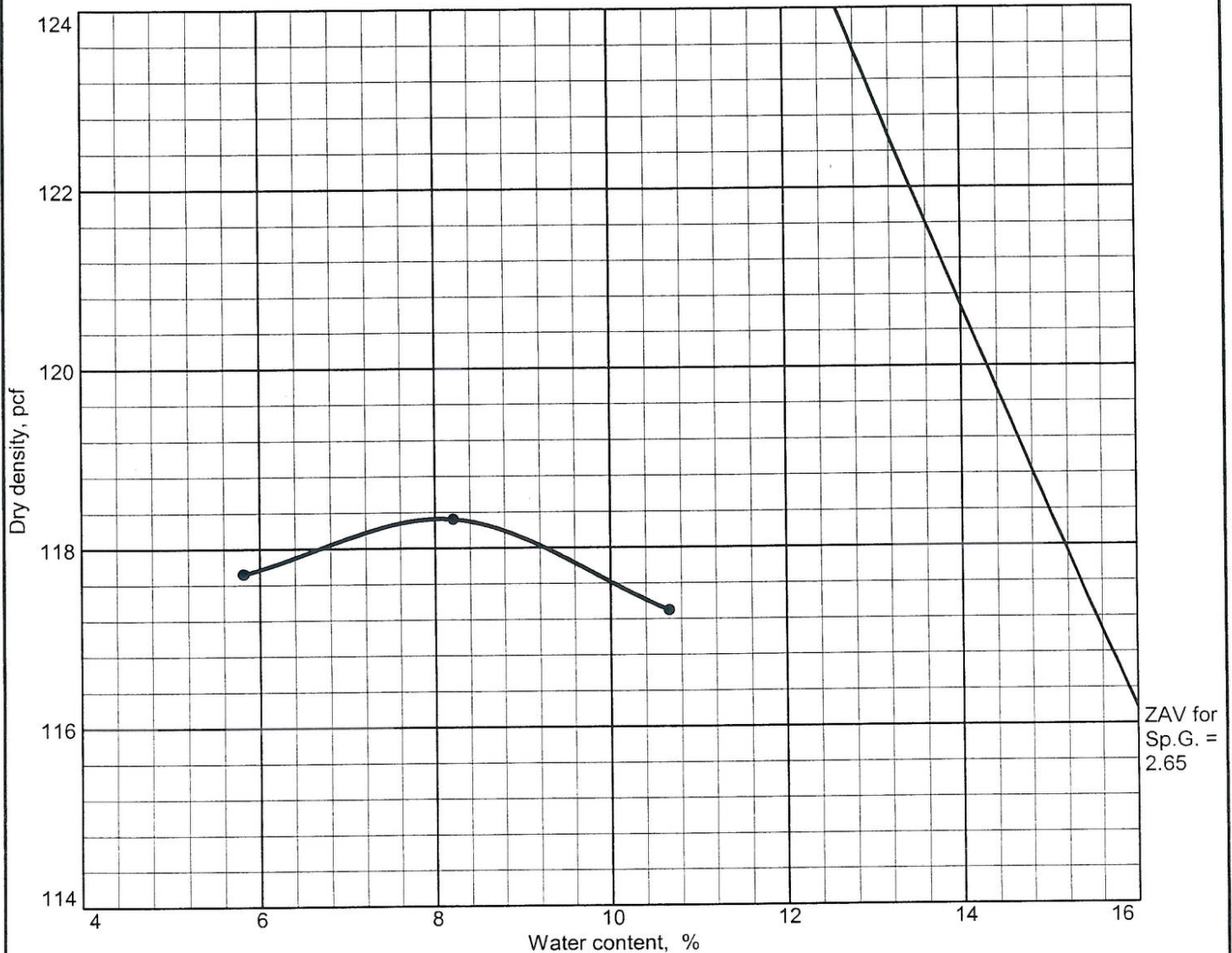
% retained on 2 in. sieve: _____ % retained on # 4 sieve: _____ % passing # 200 sieve: _____
on 3/8": _____ on 3/4": _____

Specific Gravity: _____ Specific Gravity for ZAV Curve: _____ Fig. No.: _____

Specific Gravity of Oversize: _____ Moisture of Oversize: _____

Point No.	1	2	3	4	5	6
Wt. Mold + Soil	6225.6	6185.1	6129.2			
Wt. Mold	4200.2					
Tare No.						
Wt. Wet #1	586.0	625.7	560.0			
Wt. Dry #1	536.4	566.6	528.2			
Wt. Tare #1	148.8	149.4	150.8			
Moisture #1						
Tare No.						
Wt. Wet #2						
Wt. Dry #2						
Wt. Tare #2						
Moisture #2						
Wet Density						
Avg. % Moisture						
Dry Density						

MOISTURE-DENSITY RELATIONSHIP TEST REPORT



Test specification: AASHTO T 99 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP			2.65			0.2	4.6

TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 118.3 pcf Optimum moisture = 8.1 %		Brown/Dark Brown fine to medium Sand, trace Silt and Organic Matter
Project No. 1D-1004012 Client: CorpVet, LLC Project: Contract Drill Fort McCoy, Wisconsin ● Location: Bulk Sample from B-9		
GILES ENGINEERING ASSOC., INC. Waukesha, Wisconsin		Remarks: S10200 5/10/10 Assumed Specific Gravity

Figure 24

MOISTURE DENSITY TEST DATA

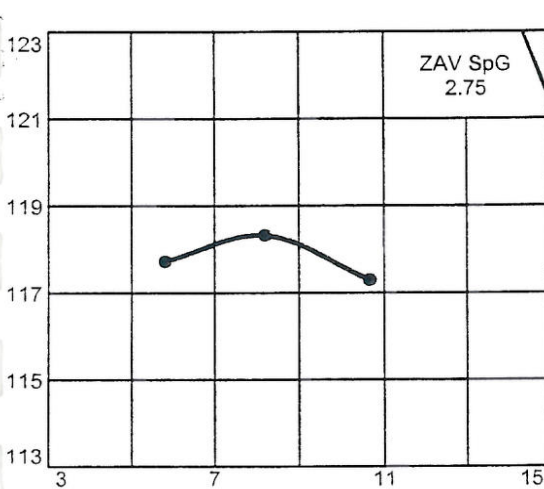
Client:
Project: Fort McCoy Contract Drill
Project Number: 1D-1004012

Specimen Data

Source: On Site
Sample No.: S10200
Elev. or Depth:
Location: On Site, B-9
Description: Brown/Dark Brown fine to medium Sand, trace Organics
SCS Classification: AASHTO Classification:
Natural Moisture: Liquid Limit: Plasticity Index:
Testing Remarks: S10200 5/10/10
Assumed Specific Gravity
Percent retained on No.4 sieve:
Percent passing No. 200 sieve: Specific gravity: 2.75

Test Data And Results

Type of test: ASTM D 1557-07 Method A Modified
Mold Dia.: 4.00 in. Hammer Wt.: 10 lb. Drop: 18 in.
Layers: five Blows per Layer: 25



POINT NO.	1	2	3
WM + WS	6083.5	6135.9	6162.6
WM	4200.2	4200.2	4200.2
WW+T	626.60	752.10	696.40
WD+T	600.50	710.80	649.80
TARE	152.00	207.80	212.80
MOIST	5.8	8.2	10.7

MOISTURE	5.8	8.2	10.7
DRY DEN	117.7	118.3	117.3

Max dry den= 118.3 pcf Opt moisture= 8.1 %

Oversize Correction Not Applied

PROCTOR TEST DATA SHEET

Date: _____ Project No.: _____

Project: _____

Sample No.: 200 Elevation/Depth: _____ Sample Length: _____

Location: _____

Description: _____

Testing Remarks: _____

Curve no.: _____ Type of Test: MOD A

% retained on 2 in. sieve: _____ % retained on # 4 sieve: _____ % passing # 200 sieve: _____

on 3/8": _____ on 3/4": _____

Specific Gravity: _____ Specific Gravity for ZAV Curve: _____ Fig. No.: _____

Specific Gravity of Oversize: _____ Moisture of Oversize: _____

Point No.	1	2	3	4	5	6
Wt Mold + Soil:	6083.5	6135.9	6162.6			
Wt Mold:	4200.2					
Tare No.						
Wt Wet #1	626.6	752.1	696.4			
Wt Dry #1	600.5	710.8	649.8			
Wt Tare #1	152.0	207.8	212.8			
Moisture #1						
Tare No.						
Wt Wet #2						
Wt Dry #2						
Wt Tare #2						
Moisture #2						
Wet Density:						
Avg. % Moisture:						
Dry Density:						

MOISTURE DENSITY TEST DATA

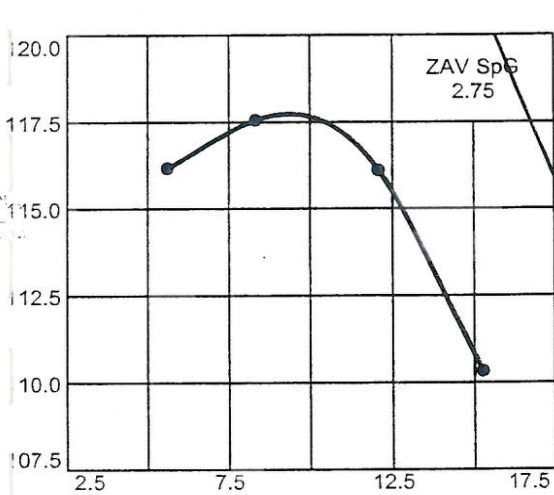
Client:
Project: Fort McCoy Contract Drill
Project Number: 1D-1004012

Specimen Data

Source: On Site
Sample No.: S10201
Elev. or Depth:
Location: On Site, B-12
Description: Brown fine to medium Sand, trace Gravel, trace Organics
USCS Classification:
Natural Moisture: Liquid Limit: Plasticity Index:
Testing Remarks: S10210 5/10/10
Assumed Specific Gravity
Percent retained on No.4 sieve:
Percent passing No. 200 sieve: Specific gravity: 2.75

Test Data And Results

Type of test: ASTM D 1557-07 Method A Modified
Mold Dia.: 4.00 in. Hammer Wt.: 10 lb. Drop: 18 in.
Layers: five Blows per Layer: 25



POINT NO.	1	2	3	4
WM + WS	6125.8	6167.5	6122.7	6055.0
WM	4200.2	4200.2	4200.2	4200.2
WW+T	599.40	539.20	590.00	621.20
WD+T	564.50	497.20	531.60	596.20
TARE	146.50	149.30	148.90	151.10
MOIST	8.3	12.1	15.3	5.6
MOISTURE	8.3	12.1	15.3	5.6
DRY DEN	117.6	116.1	110.3	116.2

Max dry den= 117.7 pcf Opt moisture= 9.4 %
Oversize Correction Not Applied

1	2	3	4	
(8.3)	(12.1)	(15.3)	(5.6)	
25	25	25	25	8.9
20	25	30	25	9.3
20	30	30	20	9.9
25	35	15	25	8.6
25	25	30	20	9.7
30	25	25	20	9.3
1800	1500	1500	1140	

PROCTOR TEST DATA SHEET

Date: _____ Project No.: _____

Project: _____

Sample No.: 201 Elevation/Depth: _____ Sample Length: _____

Location: _____

Description: _____

Testing Remarks: _____

Curve no.: _____ Type of Test: Mod A

% retained on 2 in. sieve: _____ % retained on # 4 sieve: _____ % passing # 200 sieve: _____
on 3/8": _____ on 3/4": _____

Specific Gravity: _____ Specific Gravity for ZAV Curve: _____ Fig. No.: _____

Specific Gravity of Oversize: _____ Moisture of Oversize: _____

Point No.	1	2	3	4	5	6
Wt. Mold + Soil:	6125.8	6167.5	6122.7			
Wt. Mold:	4200.6					
Tare No.						
Wt. Wet: #1	599.4	539.2	590.0			
Wt. Dry: #1	564.5	497.8	531.6			
Wt. Tare: #1	146.5	149.3	148.9			
Moisture: #1						
Tare No.						
Wt. Wet: #2						
Wt. Dry: #2						
Wt. Tare: #2						
Moisture: #2						
Wet Density:						
Avg. % Moisture:						
Dry Density:						

STANDARD TESTING

PROJECT NO.:

ID-1004012

TECHNICIAN:

DATE:

5/11/10

Boring	Depth	Cup	Tare wt.	Wet wt.	Dry wt.	Qu	Qp	Qs	W%
1	4	2-1		87.7	74.8				17
	6	2		86.6	73.8				17
	8	3		94.1	80.9				16
2	6	4		80.6	69.4				16
	8	5		91.0	77.9				17
3	4	6		83.7	71.8				17
4	4	7		62.7	52.4				20
5	4	22	12.1	86.9	76.5				16
	6	31	11.8	90.5	79.7				16
6	4	L2	17.2	121.0	100.5				25
	6	3	12.0	98.2	77.6				16
7	6	14	11.9	98.2	76.7				18
8	4	20	12.2	66.1	58.9				15
	6	32	12.0	87.5	76.5				17
9	6	34	12.0	88.0	77.3				18
10	4	12	12.0	78.5	69.8				15

STANDARD TESTING

[illegible]

STANDARD TESTING

[illegible]

-GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS-

SUMMARY OF RESISTIVITY AND PH TESTING

DATE:

[illegible]

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

PROJECT:

1

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/28/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
16"± Black Clayey Silt, trace Sand and Fine Roots (Topsoil) - Moist	0	1-SS	4			14		1 2 2 3	
Pale Brown fine to medium Sand, trace Silt - Wet	5	2-SS	14			12	18	5 7 7 7	See Figure 2
		3-SS	11			16	17	3 6 5 5	See Note A
		4-SS	13			18	16	3 6 7 10	
		5-SS	10			16		3 5 5 8	
	10								
	15	6-SS	10			14		3 5 5	
	20	7-SS	16			16		5 8 8	
	25	8-SS	7			16		2 3 4	
	30	9-SS	9			14		3 4 5	
Pale Brown and White fine to medium Sand (Possible Sandstone Bedrock), trace Silt - Wet	35	10-SS	50/3"			8		35 50/3"	
	40	11-SS	50/5"			4		50/5"	
	45	12-SS	50/5"			4		50/5"	
	50	13-SS	50/5"			4		50/5"	

Boring Terminated at 51 Feet

WATER OBSERVATION DATA			REMARKS
▽	WATER ENCOUNTERED DURING DRILLING: 1.5 ft.		Note: Water level on 5-7-10: 4.6 feet below-grade. Cave depth on 5-7-10: 4.90 feet below-grade.
▽	WATER LEVEL AFTER REMOVAL: 2.0 ft.		
○○○○	CAVE DEPTH AFTER REMOVAL: 2.5 ft.		Note A: Resistivity (Natural Moisture and Saturated)=39,000 ohm-cm; pH=6 Test Boring installed using a 2003 CME High Torque 75 truck-mount drill rig with 3¼-inch hollow stem auger drilling methods
▽	WATER LEVEL AFTER 24± HOURS: 2.0 ft.		
○○○○	CAVE DEPTH AFTER 24± HOURS: 2.0 ft.		

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID: 1D1004012-REVISED.GPJ GIL CORP.GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

2

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
8"± Black Silty fine Sand, trace Fine Roots (Topsoil) - Moist	0	1-SS	3			14		1 1 2 2	
Pale Brown fine to medium Sand, trace Silt - Wet	5	2-SS	10			14	17	3 5 5 6	See Figure 3
		3-SS	7			10	16	3 3 4 5	See Note A
		4-SS	12			16	17	4 6 6 7	
		5-SS	14			16		4 7 7 7	
	10								
	15	6-SS	13			16		4 6 7	
	20	7-SS	15			18		5 7 8	
Pale Brown and White fine to medium Sand (Possible Sandstone Bedrock), trace Silt - Wet	25	8-SS	50/3"			8		36 50/3"	
	30	9-SS	50/5"			5		50/5"	
	35	10-SS	50/4"			6		9 50/4"	
	40	11-SS	50/5"			6		50/5"	
	45	12-SS	50/1"			8		38 50/1"	
	50	13-SS	50/2"			2		50/2"	

Boring Terminated at 51 Feet

WATER OBSERVATION DATA		REMARKS
▽	WATER ENCOUNTERED DURING DRILLING: 2.0 ft.	Note: Water level on 5-7-10: Dry Cave depth on 5-7-10: 3.90 feet below-grade.
▽	WATER LEVEL AFTER REMOVAL: 2.5 ft.	
⊞	CAVE DEPTH AFTER REMOVAL: 2.5 ft.	Note A: Resistivity (Natural Moisture and Saturated)=42,000 ohm-cm; pH=6
▽	WATER LEVEL AFTER 48± HOURS: None	
⊞	CAVE DEPTH AFTER 48± HOURS: 2.0 ft.	Test Boring installed using a 2003 CME High Torque 75 truck-mount drill rig with 3¼-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED GPJ GIL CORP GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

3

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/28/10

PROJECT LOCATION:

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
14"± Black Silty fine Sand, trace Fine Roots (Topsoil) - Moist	0	1-SS	2			16		1 1 1 2	
Brown fine Sand, little medium Sand, trace Silt and Gravel - Wet	5	2-SS	11			14	17	4 5 6 6	
	5	3-SS	7			16	17	3 3 4 4	See Figure 4
		4-SS	9			14		3 4 5 5	
		5-SS	9			18		3 4 5 5	
	10								
	15	6-SS	11			14		3 5 6	
Pale Brown and White fine to medium Sand, trace Silt - Wet	20	7-SS	11			14		4 4 7	
	25	8-SS	16			12		5 7 9	
Pale Brown fine to medium Sand, trace Silt (Possible Weathered Sandstone Bedrock) - Wet	30	9-SS	50/5"			4		50/5"	
	35	10-SS	50/3"			7		28 50/3"	
	40	11-SS	50/4"			4		50/4"	
	45	12-SS	50/5"			5		50/5"	
	50	13-SS	50/5"			5		50/5"	

Boring Terminated at 51 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 1.5 ft.

WATER LEVEL AFTER REMOVAL: 2.2 ft.

CAVE DEPTH AFTER REMOVAL: 2.5 ft.

WATER LEVEL AFTER 24± HOURS: 2.2 ft.

CAVE DEPTH AFTER 24± HOURS: 2.5 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.10 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL CORP GDT 5/19/10

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

4

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/26/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
8"± Black Silty fine Sand, trace Fine Roots (Topsoil) (Possible Fill) - Moist		1-SS	8			16		2 3 5 5	
Brown Silty fine to medium Sand, trace Roots (Possible Fill) - Wet		2-SS	12			16	20	6 7 5 5	
Brown fine to medium Sand, trace Silt, Clay and Gravel - Wet	5	3-SS	8			16	18	2 4 4 4	See Figure 5
		4-SS	6			20		2 2 4 3	
		5-SS	6			20		WH 2 4 3	
	10	6-SS	8			20		3 4 4 4	
Pale Brown fine to medium Sand, trace Silt - Wet	15	7-SS	10			18		3 4 6	
	20	8-SS	15			18		5 7 8	
	25	9-SS	9			18		4 4 5	
	30	10-SS	7			18		2 3 4	
Pale Brown and White fine to medium Sand, trace Silt (Possible Weathered Sandstone Bedrock) - Wet	35	11-SS	75/7"			3		9 25 50/1"	(a)
	40	12-SS	50/1"			1		50/1"	
	45	13-SS	50/0"			0		50/0"	(b)
	50	14-SS	50/0"			0		50/0"	(b)

Boring Terminated at 51 Feet

WATER OBSERVATION DATA			REMARKS
▽	WATER ENCOUNTERED DURING DRILLING: 4.0 ft.		(a) Poor sample recovery
▽	WATER LEVEL AFTER REMOVAL: None		(b) No sample recovery
▽	CAVE DEPTH AFTER REMOVAL: 2.0 ft.		Note: Water level on 5-7-10: Dry
▽	WATER LEVEL AFTER HOURS:		Cave depth on 5-7-10: 4.30 feet below-grade.
▽	CAVE DEPTH AFTER HOURS:		Test Boring installed using a 2003 CME High Torque 75 truck-mount drill rig with 3/4-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED GPJ GIL CORP GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

5

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/28/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
12"± Black Silty fine Sand, little Organic Matter (Topsoil) - Moist	0	1-SS	3			18		1 1 2 2	See Figures 14, 28 and 22
Pale Brown fine to medium Sand, trace Silt - Wet	2	2-SS	12			14	16	4 5 7 7	
	5	3-SS	10			16	16	4 4 6 7	
	8	4-SS	16			16		6 8 8 9	
	10	5-SS	8			16		3 4 4 5	
Pale Brown and White fine to medium Sand, trace Silt (Possible Weathered Sandstone Bedrock) - Wet	15	6-SS	10			16		3 5 5	
	20	7-SS	8			12		2 3 5	
	25	8-SS	20			14		5 9 11	
	30	9-SS	50/5"			10		8 50/5"	
	35	10-SS	50/5"			6		50/5"	
	40	11-SS	50/4"			4		50/4"	
	45	12-SS	50/5"			5		50/5"	
	50	13-SS	50/2"			2		50/2"	

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 2.5 ft.

WATER LEVEL AFTER REMOVAL: 2.5 ft.

CAVE DEPTH AFTER REMOVAL: 6.5 ft.

WATER LEVEL AFTER 24± HOURS: 1.5 ft.

CAVE DEPTH AFTER 24± HOURS: 8.5 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.60 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL_CORP.GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

5

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/28/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
Pale Brown and White fine to medium Sand, trace Silt (Possible Weathered Sandstone Bedrock) - Wet (<i>continued</i>)		14-SS	50/3"			3		50/3"	
	60	15-SS	50/1"			1		50/1"	
	65	16-SS	50/2"			2		50/2"	
	70	17-SS	50/1"			1		50/1"	
	75	18-SS	50/3"			3		50/3"	

Boring Terminated at 76 Feet

WATER OBSERVATION DATA

REMARKS

▽	WATER ENCOUNTERED DURING DRILLING: 2.5 ft.	Note: Water level on 5-7-10: Dry Cave depth on 5-7-10: 4.60 feet below-grade. Test Boring installed using a 2003 CME High Torque 75 truck-mount drill rig with 3¼-inch hollow stem auger drilling methods
▽	WATER LEVEL AFTER REMOVAL: 2.5 ft.	
.....	CAVE DEPTH AFTER REMOVAL: 6.5 ft.	
▽	WATER LEVEL AFTER 24± HOURS: 1.5 ft.	
.....	CAVE DEPTH AFTER 24± HOURS: 8.5 ft.	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID: 1D1004012-REVISED GPJ GIL_CORP.GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

6

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
12"± Dark Brown Silty fine Sand, trace Fine Roots (Topsoil) (Possible Fill) - Moist		1-SS	4			20		2 2 2 1	See Figures 15, 19 and 23
Very Dark Brown fine Sand, trace Silt (Possible Fill) - Moist		2-SS	5			10	25	1 2 3 2	
Brown and Pale Brown fine Sand, trace medium Sand, Silt and Clay - Wet	5	3-SS	10			14	16	4 5 5 6	See Figure 6
		4-SS	10			18	19	3 5 5 5	
		5-SS	10			20		2 4 6 5	

Boring Terminated at 10 Feet

WATER OBSERVATION DATA

REMARKS

▽	WATER ENCOUNTERED DURING DRILLING: 4.5 ft.	Note: Water level on 5-7-10: Dry Cave depth on 5-7-10: 4.50 feet below-grade. Test Boring installed using a 2003 CME High Torque 75 truck-mount drill rig with 3/4-inch hollow stem auger drilling methods
▽	WATER LEVEL AFTER REMOVAL: None	
▤	CAVE DEPTH AFTER REMOVAL: 4.5 ft.	
▽	WATER LEVEL AFTER 48± HOURS: None	
▤	CAVE DEPTH AFTER 48± HOURS: 4.0 ft.	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL CORP GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

7

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
6"± Brown Silty fine Sand, trace Fine Roots (Topsoil) (Fill) - Moist		1-SS	6			18		4 3 3 2	See Figure 7
Very Dark Brown fine Sand, little medium Sand and Silt, trace Clay and Fine Roots (Fill) - Moist		2-SS	3			12	22	2 1 2 1	
	5	3-SS	12			14	18	3 6 6 6	
Brown and Pale Brown fine to medium Sand, trace Silt - Wet		4-SS	7			18		3 3 4 4	
		5-SS	8			20		2 3 5 5	

Boring Terminated at 10 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 4.0 ft.

WATER LEVEL AFTER REMOVAL: None

CAVE DEPTH AFTER REMOVAL: 4.5 ft.

WATER LEVEL AFTER 48± HOURS: 4.5 ft.

CAVE DEPTH AFTER 48± HOURS: 4.5 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.40 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL CORP.GDT 5/19/10

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

8

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
6"± Dark Brown Silty fine Sand, trace Fine Roots (Topsoil) (Fill) - Moist		1-SS	4			20		2 1 3 2	LOI=47.6%
Black Clayey Silt, trace fine Sand (Possible Topsoil Fill or Possible Peat) - Moist		2-SS	3			12	179	2 1 2 3	
	5	3-SS	8			12		2 4 4 4	See Figure 8
Brown fine Sand, little medium Sand, trace coarse Sand, Gravel, Silt and Clay - Wet		4-SS	6			16	17	3 2 4 4	
		5-SS	7			18	31	1 3 4 5	

Boring Terminated at 10 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 5.0 ft.

WATER LEVEL AFTER REMOVAL: 5.0 ft.

CAVE DEPTH AFTER REMOVAL: 5.5 ft.

WATER LEVEL AFTER 48± HOURS: 5.5 ft.

CAVE DEPTH AFTER 48± HOURS: 5.0 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.60 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between
test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL CORP GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

9

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
3"± Dark Brown Silty fine Sand, trace Fine Roots (Topsoil) (Possible Fill) - Moist		1-SS	4			12		2 2 2 2	See Figures 16, 20 and 24 See Figure 9
Brown fine to medium Sand, trace Silt and fine Roots at 5± Feet (Possible Fill) - Wet		2-SS	7			12	17	2 3 4 5	
	5	3-SS	7			12		2 3 4 4	
Brown fine to medium Sand, trace Silt - Wet		4-SS	11			12	18	3 4 7 7	
		5-SS	10			18		2 4 6 6	

Boring Terminated at 10 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 3.0 ft.

WATER LEVEL AFTER REMOVAL: 2.8 ft.

CAVE DEPTH AFTER REMOVAL: 3.0 ft.

WATER LEVEL AFTER 48± HOURS: 3.0 ft.

CAVE DEPTH AFTER 48± HOURS: 2.5 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.50 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL_CORP.GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

10

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
3"± Dark Brown Silty fine Sand, trace Fine Roots (Topsoil) (Possible Fill) - Moist		1-SS	6			10		4 4 2 2	
Black Clayey Silt, trace fine Sand (Possible Topsoil Fill or Possible Peat) - Moist		2-SS	5			12	126	1 2 3 3	LOI=27.3%
Brown fine to medium Sand, trace Silt and Clay - Wet	5	3-SS	10			14	18	3 5 5 5	See Figure 10
		4-SS	10			20		2 4 6 6	
		5-SS	11			18		2 5 6 7	

Boring Terminated at 10 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 5.0 ft.

WATER LEVEL AFTER REMOVAL: 5.3 ft.

CAVE DEPTH AFTER REMOVAL: 5.5 ft.

WATER LEVEL AFTER 48± HOURS: 4.1 ft.

CAVE DEPTH AFTER 48± HOURS: 4.5 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.80 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED GPJ GIL_CORP.GDT 5/19/10

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

11

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
12"± Black Clayey Silt, little Sand, trace Fine Roots (Topsoil) - Moist		1-SS	6			20		2 2 4 4	
Brown fine to medium Sand, trace Silt - Wet		2-SS	10			18	15	2 4 6 7	
	5	3-SS	10			16	17	2 5 5 5	
		4-SS	7			18		1 3 4 4	
		5-SS	16			20		3 6 10 9	

Boring Terminated at 10 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 3.0 ft.

WATER LEVEL AFTER REMOVAL: 3.3 ft.

CAVE DEPTH AFTER REMOVAL: 3.5 ft.

WATER LEVEL AFTER 48± HOURS: None

CAVE DEPTH AFTER 48± HOURS: 3.0 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.90 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL CORP GDT 5/19/10

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

12

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
3"± Asphalt		1-SS	8			10	6	4 4 4	See Figures 11, 17 21, and 25
6"± Brown Silty fine to medium Sand (Base Course) - Moist		2-SS	6			18	51 20	3 2 4 3	
Orange-Brown fine Sand, little medium Sand, trace Silt and Clay (Fill) - Moist	5	3-SS	8			18	18	2 4 4 4	
Very Dark Brown Silty Clay with Gray fine to medium Sand, trace Fine Roots (Fill) - Moist		4-SS	5			16		2 2 3 4	
Brown fine to medium Sand, trace Silt - Wet		5-SS	13			20		2 6 7 9	
Boring Terminated at 10 Feet									

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 5.0 ft.

WATER LEVEL AFTER REMOVAL: 4.9 ft.

CAVE DEPTH AFTER REMOVAL: 5.0 ft.

WATER LEVEL AFTER HOURS:

CAVE DEPTH AFTER HOURS:

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 5.0 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

REC (INCHES) IN OS & BLOW COUNTS IN PID 1D1004012-REVISED GPJ GIL CORP GDT 5/19/10

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

13

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
6"± Black Silty fine Sand, trace Fine Roots (Topsoil) - Moist	0	1-SS	2			18		WH 1 1 2	
	1	2-SS	9			16	17	3 4 5 6	
Pale Brown and White fine to medium Sand, trace coarse Sand, Gravel and Silt - Wet	5	3-SS	8			16	18	3 3 5 4	
		4-SS	9			18	17	3 4 5 5	See Figure 12
		5-SS	9			16		3 4 5 5	
	10	6-SS	9			16		3 4 5	
	15	7-SS	7			10		2 3 4	
		8-SS	24			18		10 12 12	
	20	9-SS	8			10		2 3 5	

Boring Terminated at 21 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 1.5 ft.

WATER LEVEL AFTER REMOVAL: 2.4 ft.

CAVE DEPTH AFTER REMOVAL: 2.5 ft.

WATER LEVEL AFTER 48± HOURS: None

CAVE DEPTH AFTER 48± HOURS: 2.0 ft.

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.30 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill
rig with 3¼-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED.GPJ GIL_CORP.GDT 5/19/10

RECORD OF SUBSURFACE EXPLORATION



**GILES ENGINEERING
ASSOCIATES, INC.**

Atlanta Dallas
Los Angeles Milwaukee
Orlando Washington, D.C.

BORING NO. & LOCATION:

14

PROJECT:

Contract Drill

SURFACE ELEVATION:

PROJECT LOCATION:

South 11th Avenue

COMPLETION DATE:

4/27/10

Fort McCoy, Wisconsin

FIELD REPRESENTATIVE:

Beauford Jones

GILES PROJECT NUMBER: 1D-1004012

MATERIAL DESCRIPTION	Feet Below Surface	Sample No. & Type	N	q _u (tsf)	q _p (tsf)	Recovery (Inches)	W (%)	Blow Counts	NOTES
6"± Dark Brown Silty fine Sand, trace Fine Roots (Topsoil) - Moist		1-SS	2			18		WH 1 1 2	
Pale Brown fine Sand, little medium Sand, trace coarse Sand, Gravel, Silt and Clay - Wet		2-SS	11			14	16	4 5 6 6	
	5	3-SS	6			12	16	2 3 3 3	
		4-SS	7			12	18	2 3 4 4	
		5-SS	8			12		2 3 5 5	
	10								
White fine to medium Sand, trace Silt - Wet		6-SS	12			16		4 5 7	
	15	7-SS	10			18		3 4 6	
		8-SS	16			12		7 7 9	
	20	9-SS	14			16		6 6 8	

See Figure 13

Boring Terminated at 21 Feet

WATER OBSERVATION DATA

REMARKS

WATER ENCOUNTERED DURING DRILLING: 3.0 ft.

WATER LEVEL AFTER REMOVAL: None

CAVE DEPTH AFTER REMOVAL: 2.5 ft.

WATER LEVEL AFTER HOURS:

CAVE DEPTH AFTER HOURS:

Note: Water level on 5-7-10: Dry
Cave depth on 5-7-10: 4.70 feet below-grade.

Test Boring installed using a 2003 CME High Torque 75 truck-mount drill rig with 3¼-inch hollow stem auger drilling methods

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

REC (INCHES) IN QS & BLOW COUNTS IN PID 1D1004012-REVISED GPJ GIL_CORP.GDT 5/19/10

APPENDIX B

FIELD PROCEDURES

The field operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) designation D 420 entitled "Standard Guide for Sampling Rock and Rock" and/or other relevant specifications. Soil samples were preserved and transported to *Giles'* laboratory in general accordance with the procedures recommended by ASTM designation D 4220 entitled "Standard Practice for Preserving and Transporting Soil Samples." Brief descriptions of the sampling, testing and field procedures commonly performed by *Giles* are provided herein.



GENERAL FIELD PROCEDURES

Test Boring Elevations

The ground surface elevations reported on the Test Boring Logs are referenced to the assumed benchmark shown on the Boring Location Plan (Figure 1). Unless otherwise noted, the elevations were determined with a conventional hand-level and are accurate to within about 1 foot.

Test Boring Locations

The test borings were located on-site based on the existing site features and/or apparent property lines. Dimensions illustrating the approximate boring locations are reported on the Boring Location Plan (Figure 1).

Water Level Measurement

The water levels reported on the Test Boring Logs represent the depth of "free" water encountered during drilling and/or after the drilling tools were removed from the borehole. Water levels measured within a granular (sand and gravel) soil profile are typically indicative of the water table elevation. It is usually not possible to accurately identify the water table elevation with cohesive (clayey) soils, since the rate of seepage is slow. The water table elevation within cohesive soils must therefore be determined over a period of time with groundwater observation wells.

It must be recognized that the water table may fluctuate seasonally and during periods of heavy precipitation. Depending on the subsurface conditions, water may also become perched above the water table, especially during wet periods.

Borehole Backfilling Procedures

Each borehole was backfilled upon completion of the field operations. If potential contamination was encountered, and/or if required by state or local regulations, boreholes were backfilled with an "impervious" material (such as bentonite slurry). Borings that penetrated pavements, sidewalks, etc. were "capped" with Portland Cement concrete, asphaltic concrete, or a similar surface material. It must, however, be recognized that the backfill material may settle, and the surface cap may subside, over a period of time. Further backfilling and/or re-surfacing by *Giles'* client or the property owner may be required.



FIELD SAMPLING AND TESTING PROCEDURES

Auger Sampling (AU)

Soil samples are removed from the auger flights as an auger is withdrawn above the ground surface. Such samples are used to determine general soil types and identify approximate soil stratifications. Auger samples are highly disturbed and are therefore not typically used for geotechnical strength testing.

Split-Barrel Sampling (SS) – (ASTM D-1586)

A split-barrel sampler with a 2-inch outside diameter is driven into the subsoil with a 140-pound hammer free-falling a vertical distance of 30 inches. The summation of hammer-blows required to drive the sampler the final 12-inches of an 18-inch sample interval is defined as the "Standard Penetration Resistance" or N-value is an index of the relative density of granular soils and the comparative consistency of cohesive soils. A soil sample is collected from each SPT interval.

Shelby Tube Sampling (ST) – (ASTM D-1587)

A relatively undisturbed soil sample is collected by hydraulically advancing a thin-walled Shelby Tube sampler into a soil mass. Shelby Tubes have a sharp cutting edge and are commonly 2 to 5 inches in diameter.

Bulk Sample (BS)

A relatively large volume of soils is collected with a shovel or other manually-operated tool. The sample is typically transported to *Giles'* materials laboratory in a sealed bag or bucket.

Dynamic Cone Penetration Test (DC) – (ASTM STP 399)

This test is conducted by driving a 1.5-inch-diameter cone into the subsoil using a 15-pound steel ring (hammer), free-falling a vertical distance of 20 inches. The number of hammer-blows required to drive the cone 1¾ inches is an indication of the soil strength and density, and is defined as "N". The Dynamic Cone Penetration test is commonly conducted in hand auger borings, test pits and within excavated trenches.

- Continued -



GILES ENGINEERING ASSOCIATES, INC.

APPENDIX C

LABORATORY TESTING AND CLASSIFICATION

The laboratory testing was conducted under the supervision of a geotechnical engineer in accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Brief descriptions of laboratory tests commonly performed by *Giles* are provided herein.



LABORATORY TESTING AND CLASSIFICATION

Photoionization Detector (PID)

In this procedure, soil samples are “scanned” in *Giles’* analytical laboratory using a Photoionization Detector (PID). The instrument is equipped with an 11.7 eV lamp calibrated to a Benzene Standard and is capable of detecting a minute concentration of **certain** Volatile Organic Compound (VOC) vapors, such as those commonly associated with petroleum products and some solvents. Results of the PID analysis are expressed in HNu (manufacturer’s) units rather than actual concentration.

Moisture Content (w) (ASTM D 2216)

Moisture content is defined as the ratio of the weight of water contained within a soil sample to the weight of the dry solids within the sample. Moisture content is expressed as a percentage.

Unconfined Compressive Strength (q_u) (ASTM D 2166)

An axial load is applied at a uniform rate to a cylindrical soil sample. The unconfined compressive strength is the maximum stress obtained or the stress when 15% axial strain is reached, whichever occurs first.

Calibrated Penetrometer Resistance (q_p)

The small, cylindrical tip of a hand-held penetrometer is pressed into a soil sample to a prescribed depth to measure the soils capacity to resist penetration. This test is used to evaluate unconfined compressive strength.

Vane-Shear Strength (q_s)

The blades of a vane are inserted into the flat surface of a soil sample and the vane is rotated until failure occurs. The maximum shear resistance measured immediately prior to failure is taken as the vane-shear strength.

Loss-on-Ignition (ASTM D 2974; Method C)

The Loss-on-Ignition (L.O.I.) test is used to determine the organic content of a soil sample. The procedure is conducted by heating a dry soil sample to 440°C in order to burn-off or “ash” organic matter present within the sample. The L.O.I. value is the ratio of the weight loss due to ignition compared to the initial weight of the dry sample. L.O.I. is expressed as a percentage.



Particle Size Distribution (ASTB D 421, D 422, and D 1140)

This test is performed to determine the distribution of specific particle sizes (diameters) within a soil sample. The distribution of coarse-grained soil particles (sand and gravel) is determined from a "sieve analysis," which is conducted by passing the sample through a series of nested sieves. The distribution of fine-grained soil particles (silt and clay) is determined from a "hydrometer analysis" which is based on the sedimentation of particles suspended in water.

Consolidation Test (ASTM D 2435)

In this procedure, a series of cumulative vertical loads are applied to a small, laterally confined soil sample. During each load increment, vertical compression (consolidation) of the sample is measured over a period of time. Results of this test are used to estimate settlement and time rate of settlement.

Classification of Samples

Each soil sample was visually-manually classified, based on texture and plasticity, in general accordance with the Unified Soil Classification System (ASTM D-2488-75). The classifications are reported on the Test Boring Logs.

Laboratory Testing

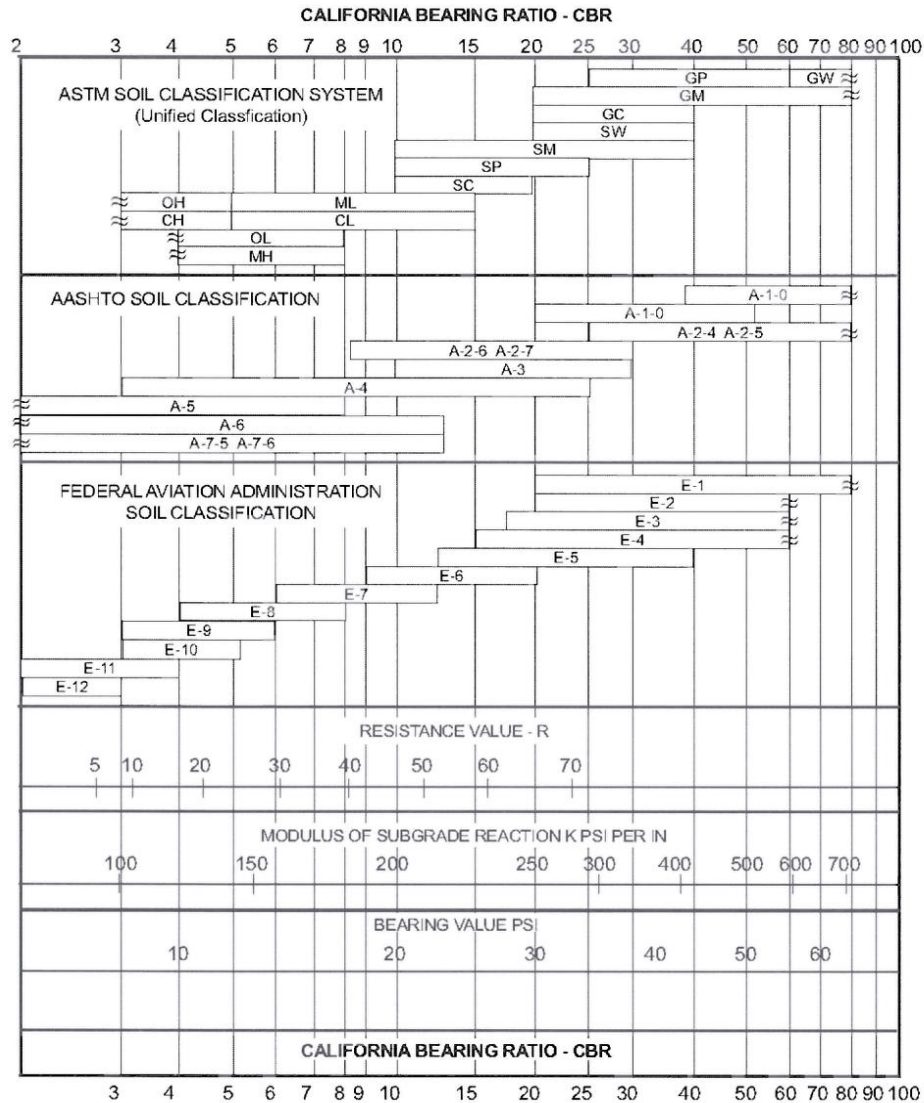
The laboratory testing operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the laboratory tests are provided on the Test Boring Logs or other appendix enclosures. Explanation of the terms and symbols used on the logs is provided on the appendix enclosure entitled "General Notes."



California Bearing Ratio (CBR) Test ASTM D-1833

The CBR test is used for evaluation of a soil subgrade for pavement design. The test consists of measuring the force required for a 3-square-inch cylindrical piston to penetrate 0.1 or 0.2 inch into a compacted soil sample. The result is expressed as a percent of force required to penetrate a standard compacted crushed stone.

Unless a CBR test has been specifically requested by the client, the CBR is estimated from published charts, based on soil classification and strength characteristics. A typical correlation chart is below.



GENERAL NOTES

Section:

SAMPLE IDENTIFICATION

All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)

Trace:	1-10%
Little:	11-20%
Some:	21-35%
And/Adjective	36-50%

PARTICLE SIZE (DIAMETER)

Boulders:	8 inch and larger
Cobbles:	3 inch to 8 inch
Gravel:	coarse - ¾ to 3 inch fine - No. 4 (4.76 mm) to ¾ inch
Sand:	coarse - No. 4 (4.76 mm) to No. 10 (2.0 mm) medium - No. 10 (2.0 mm) to No. 40 (0.42 mm) fine - No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt:	No. 200 (0.074 mm) and smaller (non-plastic)
Clay:	No 200 (0.074 mm) and smaller (plastic)

SOIL PROPERTY SYMBOLS

Dd:	Dry Density (pcf)
LL:	Liquid Limit, percent
PL:	Plastic Limit, percent
PI:	Plasticity Index (LL-PL)
LOI:	Loss on Ignition, percent
Gs:	Specific Gravity
K:	Coefficient of Permeability
w:	Moisture content, percent
qp:	Calibrated Penetrometer Resistance, tsf
qs:	Vane-Shear Strength, tsf
qu:	Unconfined Compressive Strength, tsf
qc:	Static Cone Penetrometer Resistance

PID: Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-Units. (BDL=Below Detection Limit)

N: Penetration Resistance per 12 inch interval, or fraction thereof, for a standard 2 inch O.D. (1½ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N-Values where plus sign (+) is shown.

Nc: Penetration Resistance per 1¼ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.

Nr: Penetration Resistance per 12 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon
ST:	Shelby Tube - 3 inch O.D. (except where noted)
CS:	3 inch O.D. California Ring Sampler
DC:	Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Wash Sample
RB:	Rock-Roller Bit
BS:	Bulk Sample
Note:	Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE CONSISTENCY	BLOWS PER FOOT (N)	UNCONFINED COMPRESSIVE STRENGTH (TSF)
Very Soft	0 - 2	0 - 0.25
Soft	3 - 4	0.25 - 0.50
Medium Stiff	5 - 8	0.50 - 1.00
Stiff	9 - 15	1.00 - 2.00
Very Stiff	16 - 30	2.00 - 4.00
Hard	31+	4.00+

NON-COHESIVE (GRANULAR) SOILS

RELATIVE DENSITY	BLOWS PER FOOT (N)
Very Loose	0 - 4
Loose	5 - 10
Firm	11 - 30
Dense	31 - 50
Very Dense	51+

DEGREE OF PLASTICITY	PI	DEGREE OF EXPANSIVE POTENTIAL	PI
None to Slight	0 - 4	Low	0 - 15
Slight	5 - 10	Medium	15 - 25
Medium	11 - 30	High	25+
High to Very High	31+		



GILES ENGINEERING ASSOCIATES, INC.

Appendix B
List of Drawings

**Please see Appendix J,
General Cover Sheet, Sheet 10-G-1.1.**

Appendix C

Utility Connections

Utility Connections are shown on the Civil drawings.

Appendix D

Fire Flow Test Results

LOCATION: Fort McCoy DOIM

DATE: 03-22-10

TIME: 1315

Static Hydrant Number:	1411	Flowing Hydrant Number:	1412
Elevation:	0	Elevation:	0

Dist. Between Hydrants: 350

Diameter of Main: 8

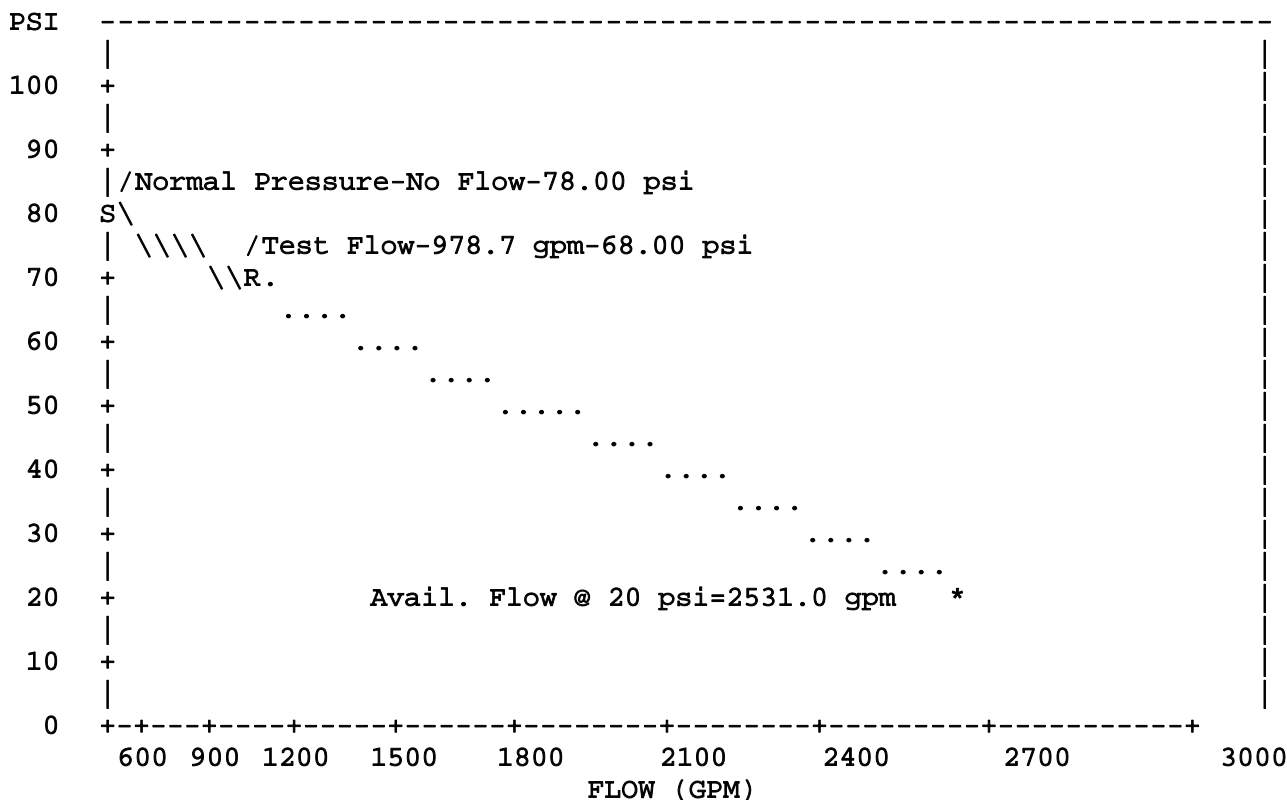
Outlet Diameter:	2.50 in	Number flowing: 1	Coeff.: 0.90
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Static pressure:	78.00 psi	Residual pressure:	68.00 psi
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Pitot Reading:	34.00 psi	Flow:	978.7 gpm
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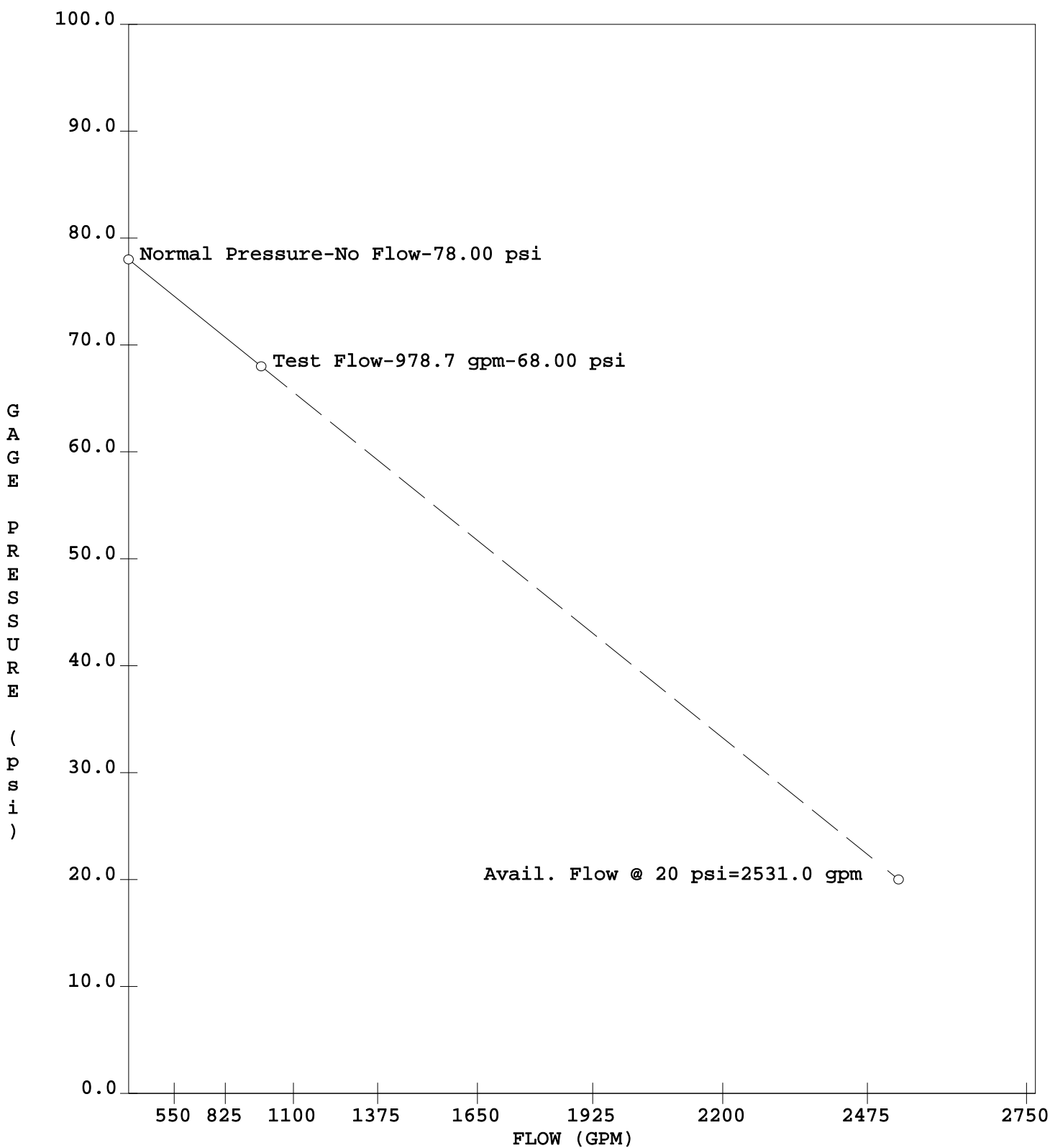
Flow at 20 psi: 2531.0 gpm

GRAPH:



NOTES:

- (1) Flowing hydrant is assumed to be on a circulating main or downstream of the pressure test hydrant on a dead-end system.
- (2) Flow analysis assumes a gravity flow system with no distribution pumps and having no demand, other than the test flow.
- (3) Distance between hydrants, elevations & main diameter are for information only.



Appendix E

Environmental Protection and Enhancement

Army Regulation 200-1

Environmental Quality

Environmental Protection and Enhancement

Headquarters
Department of the Army
Washington, DC
13 December 2007

UNCLASSIFIED

Thursday, July 15, 2010

SUMMARY of CHANGE

AR 200-1

Environmental Protection and Enhancement

This administrative revision, dated 13 December 2007--

- o Updates the policy regarding Army Program Guidance Memorandum (para 15-1).
- o Corrects typographical errors throughout the publication.

Headquarters
Department of the Army
Washington, DC
13 December 2007

*Army Regulation 200–1

Effective 27 December 2007


Environmental Quality

Environmental Protection and Enhancement

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:


JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

History. This publication is an administrative revision. The portions affected by this administrative revision are listed in the summary of change.

Summary. This regulation covers environmental protection and enhancement and provides the framework for the Army Environmental Management System.

Applicability. This regulation addresses environmental responsibilities of all Army organizations and agencies. Specifically, this regulation applies to—

- (a) Active Army, Army National Guard/Army National Guard of the United States, and United States Army Reserve.
- (b) Tenants, contractors, and lessees performing functions on real property under jurisdiction of the Department of the Army (for example, Army and Air Force Exchange Service (AAFES), Defense Commissary Agency (DECA)).
- (c) Activities and operations under the purview of the Army even when performed off of installations.
- (d) Formerly used defense sites (FUDS) and other excess properties managed by the Army. As used throughout this regulation, the term Army National Guard includes the Army National Guard of the United States.

Installations and facilities in foreign countries will comply with requirements of this regulation that specifically prescribe overseas requirements.

Contracts to operate Government-owned facilities will reference this regulation and will designate by specific citation the applicable provisions.

This regulation does not apply to civil works (CW) functions under the jurisdiction of the U.S. Army Corps of Engineers (USACE).

The terms "Army environmental programs" and "Army Environmental Program" must be read in context. All Army organizations, regardless of their organizational level or chain of command, have environmental responsibilities as part of their functions; these environmental responsibilities must be incorporated into the planning, programming, budgeting, and execution of their respective missions. The Assistant Chief of Staff for Installation Management, working through the Director of Environmental Programs (see Responsibilities, para 1–13x), has specific and more narrowly defined responsibilities that are planned, programmed, budgeted, and executed via assigned accounts. These accounts resource specifically prescribed and focused environmental efforts. Each organization must program and fund its environmental activities from the appropriate account of the proponent's operating budget, not necessarily an environmental account. Being mindful of the context in which requirements are articulated will help define the scope of the "program" being addressed and will preclude inappropriate resourcing decisions or expectations.

Proponent and exception authority. The proponent of this regulation is the Assistant Chief of Staff for Installation Management. The proponent has the authority to approve exceptions or waivers

to this regulation that are consistent with law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific guidance.

Army management control process. This regulation contains management control provisions and identifies key management controls that must be evaluated.

Supplementation. Supplementation of this regulation and establishment of command or local forms are prohibited without prior approval from Assistant Chief of Staff for Installation Management, 600 Army Pentagon, Washington, DC 20310–0600.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the chain of command to HQDA, DAIM–ED, 600 Army Pentagon, Washington, DC 20310–0600.

Distribution. This publication is available in electronic media only and is intended for command levels C, D, and E for the Active Army, the Army National Guard/Army National Guard of the United States and the United States Army Reserve.

*This regulation supersedes AR 200–1, dated 28 August 2007.

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Glossary

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Chapter 1 Introduction

Section I General

1–1. Purpose

a. This regulation implements Federal, State, and local environmental laws and DOD policies for preserving, protecting, conserving, and restoring the quality of the environment. This regulation should be used in conjunction with 32 Code of Federal Regulations (CFR) Part 651 (32 CFR 651), which provides Army policy on National Environmental Policy Act (NEPA, 42 USC 4321–4347) requirements, and supplemental program guidance, which the proponent of this regulation may issue as needed to assure that programs remain current. Environmental stewardship includes, but is not limited to—

- (1) Environmental components of installation sustainability.
- (2) Environmental support to the Army training and testing mission.
- (3) Environmental support during deployments and contingency operations on and off the installation, and operations at Army facilities that are not officially designated as installations.
- (4) Compliance-related Cleanup (CC) Program.
- (5) Army Defense Environmental Restoration Program (DERP).
- (6) Formerly used defense sites (FUDS).
- (7) Defense and State Memoranda of Agreement/Cooperative Agreement (DSMOA/CA) Program.
- (8) Pollution prevention.
- (9) Compliance with environmental legal mandates.
- (10) Natural resources.
- (11) Cultural resources.
- (12) Environmental protection aspects of pest management.
- (13) Environmental training for military and civilian personnel.
- (14) Base realignment and closure (BRAC) environmental program.
- (15) NEPA requirements.
- (16) Operational noise.
- (17) Environmental quality technology (EQT).
- (18) Environmental Legislative/Regulatory Analysis and Monitoring Program (EL/RAMP).
- (19) Environmental reporting and information management.
- (20) Environmental considerations in real estate and materiel acquisition programs.

b. This regulation defines the framework for the Army Environmental Management System (EMS). All appropriate facilities were to have implemented a mission focused EMS by the end of calendar year (CY) 05, and must attain International Organization for Standardization standard 14001 (ISO 14001) conformance by the end of FY09. The Army EMS Commanders Guide, Army EMS Implementer's Guide, and Army EMS Aspects and Impact Methodology for Army Training Ranges provide detailed implementation guidance.

c. The chapters of this regulation reflect inclusion of the five interconnected EMS areas of policy, planning, implementation and operation, checking and corrective action, and management review.

(1) *Policy.* The Army Environmental Policy Statement reflects the Army's commitment to environmental protection and enhancement, pollution prevention, and continual improvement (chap 2).

(2) *Planning and implementation.* The Army will identify how its operations impact the environment. It will set objectives and targets for reducing impacts. It will identify and track applicable legal and other requirements, and will support operational effectiveness and improve program management (chap 3).

(3) *Program management and operation.* The Army will assign roles and responsibilities for environmental management (section II of this chap), provide required environmental training, establish procedures for communication within and outside the organization, document environmental procedures, and provide for emergency preparedness and response (chap 15).

(4) *Checking and corrective action.* The Army will monitor and measure its progress in achieving stated goals, objectives, and targets, and will identify and implement corrective actions (chap 16).

(5) *Management review.* The Army will periodically review program performance and management system implementation and ensure continual improvement (chap 17).

1–2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this regulation are explained in the glossary.

Section II Responsibilities

1–4. The Secretary of the Army

The Secretary of the Army (SA) serves as trustee for the natural and cultural resources managed by the Army. The SA is responsible for protecting and sustaining the quality of the air, land, and water resources entrusted to the Army. The SA signs the Army Environmental Policy Statement and certifies that the Army Environmental Program Objective Memorandum (POM) for the Army Environmental Restoration Program (ERP) meets all legal requirements and agreements.

1–5. The Assistant Secretary of the Army (Installations and Environment)

The Assistant Secretary of the Army (Installations and Environment) (ASA(I&E)) has primary responsibility for the Army's military environmental programs (that is, other than civil works (CW) functions of the U.S. Army Corps of Engineers (USACE)). Those responsibilities are carried out through the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) (DASA(ESOH)) who will—

a. Provide overall policy, advocacy, program direction, and oversight across installations, logistics, acquisition, and operations. This includes, but is not necessarily limited to, military operations and activities (including training, deployments, and contingency operations) on and off the installation and operations at Army facilities that are not officially designated as installations or sites.

b. Establish long-term strategy and annual AEP goals, objectives, and metrics.

c. Serve as the Army's top management representative for the Army EMS.

d. Provide policy and oversight for EMS responsibilities per ISO 14001 and this regulation.

e. Serve as the Army's senior policy level official for historic preservation in accordance with Executive Order (EO) 13287, Preserve America, and as the Federal Preservation Officer for oversight and coordination of Army activities under the National Historic Preservation Act (NHPA), including approving and signing Army National Register of Historic Places (NRHP) nominations for Federally-owned and -controlled historic properties.

f. Serve as the primary point of contact with the Office of the Secretary of Defense (OSD), Congress, other Federal and State agencies, and other components for environmental matters.

g. On behalf of the SA, carry out DOD executive agent (EA) responsibilities for the following OSD programs: Environmental Information Technology Management (EITM), FUDS, DSMOA, Low-Level Radioactive Waste (LLRW), Defense Occupational Health Program (DOHP), National Defense Center for Environmental Excellence (NDCEE), DOD regional environmental coordinators (RECs), DOD Forestry Reserve Account, and environmental-related annexes to Master Data Exchange Agreements.

h. Provide policy, advocacy, program direction, and oversight for Formerly Used Defense Sites (FUDS), Base Realignment and Closure (BRAC), and the Army's Defense Environmental Restoration Program.

i. Approve selection of Army representative(s) for inter-service and interagency environmental committees.

j. Provide oversight and coordination of strategic outreach and communication.

k. Provide policy, advocacy, program direction, and oversight of the Army EQT Program.

l. Serve as a permanent co-chair of the Environmental Technology Technical Committee (ETTC); consolidate and prioritize Army environmental technology needs and ensure the cost-effective allocation of available resources, consistent with the Army Program Guidance Memorandum (APGM).

m. Provide policy, advocacy, program direction, and oversight of environmental support to the Army acquisition process.

(1) In conjunction with the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA (ALT)), annually review Army environmental quality research, development, test, and evaluation (RDT&E) efforts.

(2) Provide representation on the Overarching Integration Product Teams (OIPT) supporting Army Systems Acquisition Review Councils (ASARC) to ensure Army material in all acquisition categories meet requisite environmental criteria prior to milestone reviews.

(3) Provide recommendations to the Milestone Decision Authority regarding program environmental quality requirements.

n. Review all Army weapons system acquisition programs for potential or real impacts to environmental quality and/or Army installations.

o. Review Army weapons system acquisition program environmental quality costs by participating on the Army Cost Review Boards (CRB) and providing representation on weapons system cost working group Integrated Product Teams (IPTs).

- p.* Develop and approve funding policies for environmental programs in coordination with the Assistant Secretary of the Army (Financial Management & Comptroller) (ASA (FM&C)), and with the ASA (ALT) for RDT&E efforts.
- q.* Approve Army environmental input to Program Objective Memorandum (POM) direction, priorities, and guidance.
- r.* Approve AEP POM and budget submissions, resource allocations, unfinanced requirements (UFRs), and budget adjustments recommended by the ACSIM in coordination with the DCS, G-8 and the ASA (FM&C).
- s.* Ensure that the Army's trust responsibility and government-to-government relationship with Federally-recognized Indian Tribes are fulfilled.
- t.* Approve NHPA compliance agreements, as required.
- u.* Approve and integrate the Army Environmental Policy Institute (AEPI) and U.S. Army Environmental Command (USAEC) annual work plans.
- v.* Provide supervision and program direction for the AEPI, to include POM, budget, and UFR approvals.
- w.* Consult with the ACSIM on selection of the Director of Environmental Programs (DEP).
- x.* Serve as the intermediate rater for the DEP and Commander, USAEC, and provide input into their performance objectives.
- y.* Act as co-chair with the ACSIM for the HQDA Environmental Quality Control Committee (EQCC).
- z.* Provide direction and delegate specific actions to the Army DOD RECs.
- aa.* Manage the operation of the regional environmental offices (REOs).
- ab.* Serve a permanent co-chair of the DOD Operational and Environmental Executive Steering Committee on Munitions (OEESCM).
- ac.* Report annually to the SA/CSA on AEP execution.
- ad.* Serve as point of contact for external audits of the AEP.
- ae.* Provide Congressional testimony and reports to Congress.
- af.* Provide programmatic environmental scoping and planning to include National Environmental Policy Act (NEPA) and Strategic Environmental Assessment (SEA).
- ag.* Oversee AEP support to natural and built environments, to include ranges.
- ah.* Ensure the AEP addresses overseas installations and activities.
- ai.* Integrate energy, pollution prevention, and EMS.
- aj.* Integrate ESOH programs and activities with force protection and national security.
- ak.* Execute the EL/RAMP.

1-6. The Assistant Secretary of the Army (Financial Management and Comptroller)

The Assistant Secretary of the Army (Financial Management and Comptroller) (ASA (FM&C)) will—

- a.* Issue planning, programming, and execution (PPBE) system policy, Funding Authorization Document (FAD) footnotes for the Conservation Reimbursable Forestry and Agricultural/Grazing Outlease Programs, guidance for environmental programs, and Fish and Wildlife Conservation Fund (21X5095) apportionments, in coordination with the ASA (I&E).
- b.* Develop an independent cost estimate (ICE) that includes an environmental quality life cycle cost estimate (EQLCCE) for each weapons system. Reconciles differences in the EQLCCE, and the program office estimate (POE) in developing the Army cost position (ACP).
- c.* Collect and report environmental liabilities for the Army's Financial Statement.

1-7. The Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

The Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA (ALT)) will—

- a.* Provide policy, guidance, oversight, and technical assistance to acquisition program managers and program executive offices as required to ensure integration of environmental quality considerations in all aspects of acquisition programs.
- b.* Plan, program, budget, and execute the Army's Environmental Quality Technology Program (for EQT Budget Activity 1, 2, and 3 Program initiatives) in coordination with the ASA (I&E) to maximize the ability of the Army to achieve its environmental strategy.
- c.* Develop policy to ensure procurement of materiel designed to minimize environmental impacts throughout its life cycle, while ensuring operational effectiveness.
- d.* Develop policy in coordination with the ASA (I&E) on acquisition of hazardous material.
- e.* Develop and oversee initiatives to reduce the volume and toxicity of hazardous materials and ozone depleting substances (ODS) used in Army materiel.
- f.* Review annually Army environmental quality technology program RDT&E efforts in conjunction with the ASA (I&E).
- g.* Designate the Director, Research and Laboratory Management, OASA(ALT), a permanent co-chair of the Environmental Technology Technical Committee (ETTC), who in conjunction with the ACSIM, consolidates and

prioritizes Army environmental technology needs and ensures the cost-effective allocation of available resources, consistent with the APMG.

h. Integrate environmental considerations/awareness into acquisition programs and training in accordance with DODD 5000.1.

i. Ensure that environmental quality life cycle costs are clearly identified in the Program Office Estimate.

j. Serve as the proponent for the Army Green Procurement Program (GPP) to facilitate compliance with Affirmative Procurement requirements (for recovered materials and biobased items) and encourage the acquisition and use of environmentally preferable products and services.

k. Ensure all requests for proposal (RFP), contracts, and contract modifications include a requirement that bidders providing goods and services to installations certify (in the Representations and Certifications component of their proposal) that operations of their team (including subcontractors) will be consistent with the installation's and the Army's EMS.

l. Incorporate environmental and EMS requirements into appropriate acquisition regulations, policies, and procedures, and appoint a single point of contact for coordinating this action with the ACSIM/DEP.

m. Provide direct support to the Army Acquisition Community, Program Executive Officers, and Program/Product/Project Managers regarding environmental and affirmative procurement initiatives, issues and concerns by—

(1) Providing recommendations to the Army Acquisition Executive (AAE) or other decision authority about environmental issues associated with materiel and ASA (ALT) mission functions.

(2) Designating a single point of contact for coordinating environmental issues related to materiel development, logistics, and technology for Headquarters, Department of the Army (HQDA) component organizations in coordination with the Office of the ASA (I&E).

(3) Ensuring execution of environmental policy by acquisition managers.

1-8. The Chief of Public Affairs

The Chief of Public Affairs (CPA) will—

a. Provide policy, guidance, and oversight for public affairs support to the Army's environmental programs.

b. Provide advice and recommendations on handling the public affairs aspects of Section 552, Title 5, United States Code (5 USC 552) requests related to the environmental program.

1-9. The Deputy Chief of Staff, G-3/5/7

The Deputy Chief of Staff, G-3/5/7 (DCS, G-3/5/7) is responsible for developing and coordinating policy, programs, and initiatives to achieve directed levels of training readiness for the Army and serves as the overall integrator of Army Transformation. The DCS, G-3/5/7 will—

a. Serve as the focal point for spectrum activities encompassing force development, combat development, training development, resource management, and prioritization.

b. Establish priorities and requirements for Army ranges and training lands.

c. Exercise overall supervision, direction, and management oversight for the Sustainable Range Program (SRP). Specific responsibility for the SRP resides with the Chief, Training Support Systems Division (DAMO-TRS), who will—

(1) Serve as the HQDA functional proponent for the SRP and its core programs.

(2) Formulate policies and issue administrative programmatic guidance and instructions for implementing and sustaining the core programs within Army Commands (ACOMs), Army Service Component Commands (ASCCs), and Direct Reporting Units (DRUs), the Army National Guard (ARNG), and Headquarters, Installation Management Command (HQ IMCOM).

(3) Formulate policies for planning, programming, operating, and managing ranges and training lands that specify how the Army will—

(a) Resource range operations and modernization through the Range and Training Land Program, and land management and maintenance through the Integrated Training Area Management (ITAM) Program.

(b) Integrate range requirements into the overall Army infrastructure investment strategy in conjunction with the Office of the Assistant Chief of Staff for Installation Management (OACSIM).

(c) Centrally fund unexploded ordnance (UXO) clearance for range modernization projects.

(d) Centrally fund the preparation of NEPA documentation for range modernization projects and major training land acquisitions.

(e) Coordinate and synchronize range and training land policy to preclude conflicts between range operations and military training, natural and cultural resources management, environmental management, facilities management, and master planning activities.

(4) Serve as the co-chair of the Army Range Sustainment Integration Council (ARSIC).

1-10. The Deputy Chief of Staff, G-4

The Deputy Chief of Staff, G-4 (DCS, G-4) will—

- a.* Identify, program, and secure funds to address the environmental aspects of the functions for which the DCS, G-4 is responsible.
- b.* Incorporate environmental considerations and requirements into all aspects of the DCS, G-4 mission, to include materiel management, integrated logistics support, supply, transportation, maintenance management, and logistics training.
- c.* Serve as the staff proponent for policy development pertaining to hazardous materials minimization and management, to include inventory management per AR 710-2.
- d.* Ensure that timely hazardous material (HM) handling, packaging, and transportation training is provided to Army personnel within the continental United States (CONUS) and overseas as required.
- e.* Serve as the proponent for implementation of the Military Munitions Rule.
- f.* Execute quarantine responsibilities for transport and logistics.

1-11. The Deputy Chief of Staff, G-8

The Deputy Chief of Staff, G-8 (DCS, G-8) will—

- a.* Provide Army cross-PEG (Program Evaluation Group) funding process guidance to assure cost effective compliance with environmental legal mandates while optimizing benefits to the Army missions and operations.
- b.* Assure priority is given to resource allocation that cost effectively resolves environmental aspects that impact missions and operations needed to equip, sustain and train our combat forces.
- c.* Review plans and requirements of Senior Mission Commanders, Army Command/Army Service Component Command/Direct Reporting (ACOM/ASCC/DRU) commanders, acquisition program managers and garrison commanders that address compliance with legal environmental mandates and resolve environmental aspects impacting missions and operations.
- d.* Review plans and requirements for the Army Environmental Program in coordination with the Assistant Chief of Staff for Installation Management (ACSIM).
- e.* Conduct annual review of resources allocated to sustaining Army environmental compliance to overhead investments in the most cost effective manner.

1-12. Commander, U.S. Army Corps of Engineers

The Commander, U.S. Army Corps of Engineers (USACE) will—

- a.* Administer the Clean Water Act (CWA) Section 404 permit program pertaining to the discharge of dredged/fill material into waters/wetlands of the United States.
- b.* Provide additional environmental support to the Army and other DOD elements as requested.
- c.* Provide environmental support to other Federal, State, and local agencies when tasked.
- d.* Provide Army DERP execution support on a reimbursable basis to installations through Districts and the Centers of Expertise for hazardous, toxic, and radioactive waste (HTRW) and for munitions and explosives of concern (MEC).
- e.* Administer the DSMOA/CA Program for the Assistant Deputy Undersecretary of Defense (Environment, Safety, and Occupational Health) (ADUSD (ESOH)).
- f.* Serve as executing agency for the FUDS program, consistent with the FUDS Charter. Establish FUDS requirements and policy guidance for program management, planning, reporting, execution, data access, quality control, and performance measurement.
- g.* Provide technical support by implementing sustainable design and development (SDD) practices, including incorporating SDD/sustainable project rating tool (SPiRiT) and environmental criteria into the Army's project design and construction process. (NOTE: Beginning in FY08, SPiRiT will be replaced by Leadership in Energy and Environmental Design (LEED); all new construction must meet the LEED Silver standard.)
- h.* Incorporate environmental requirements into appropriate USACE activities, and appoint a single point of contact for coordinating this action with the ACSIM/DEP.
- i.* Approve and integrate the USACE Engineer Research and Development Center (ERDC) EQT program and provide overall policy direction for the ERDC.

1-13. The Assistant Chief of Staff for Installation Management

The Assistant Chief of Staff for Installation Management (ACSIM) will—

- a.* Serve as the HQDA proponent for the AEP.
- b.* Establish priorities, guidance, and procedures for installation operations, real property management, and environmental stewardship for all activities and functions within Army garrisons.
- c.* Promote environmental stewardship and sustainability in support of the ASA (I&E).
- d.* Incorporate environmental requirements into appropriate regulations, guidance documents, and procedures to support environmental stewardship.

- e. Co-chair the HQDA annual Review and Analysis with the ASA (I&E).
- f. Issue appropriate programming and funding guidance to ACOMs, ASCCs, DRUs, NGB-ARNG, HQ IMCOM, and special installations to support development of the environmental programs component of the Program Objective Memorandum (POM).
- g. Develop and direct the planning, programming, and budget execution of the environmental components of the Installations Program Evaluation Group (II PEG) programs needed to sustain readiness and comply with appropriate Federal, State, and local laws, Executive Orders, DOD Directives overseas Final Governing Standards, international treaties and Status of Forces Agreements (SOFAs) in accordance with General Order #3 and APGM. This specifically includes base operations support (BOS) service activities addressed by the following Management Decision Packages (MDEPs):
 - (1) VENC (Environmental Compliance).
 - (2) VENN (Environmental Conservation).
 - (3) VEMR (Environmental Support to Ranges and Munitions).
 - (4) VEPP (Pollution Prevention).
 - (5) VEQT (Environmental Technology).
 - (6) ENVR (Environmental Restoration).
- h. Direct execution of the environmental components of the Installations Program Evaluation Group (II PEG) programs.
- i. Serve as proponent of the Army Compatible Use Buffer (ACUB) program.
- j. Perform the EA duties for the DOD Forestry Reserve Account in coordination with the DASA (ESOH).
- k. Provide representation for environmental and installation concerns on the Army Requirements Oversight Council (AROC).
- l. Provide guidance on incorporating BRAC oversight and responsibilities on environmental and Military Munitions Response Program (MMRP) through the ACSIM BRAC Division (DAIM-BD).
- m. As the Army's combat developer (CBTDEV) for installations, generate, validate, and prioritize environmental quality RDT&E requirements.
- n. Serve as a member of the Environmental Technology Technical Council (ETTC).
- o. Serve as proponent for Army SDD facility policies that are incorporated into the process of planning, designing, constructing, operating, maintaining, renovating, and disposing installation facilities.
- p. Serve as the technical advisor to ASA (I&E) for all environmental matters impacting installation sustainment and materiel operation and support.
- q. Promote and integrate installation sustainability across all functional areas (for example, logistics, environment, training, engineering).
- r. Maintain an organization within the OACSIM that will—
 - (1) Provide to the ASA (I&E), and others as directed, an Environmental Quality Impact Analysis (EQIA) for major weapons systems acquisition program decision reviews.
 - (2) Provide technical support to the ASA(FM&C) for environmental quality life cycle cost estimates as part of the Army Cost Review process as required.
 - (3) Upon request, assist program managers in integrating environmental quality considerations into all aspects of the acquisition program.
- s. Issue implementing guidance to eliminate ODS use on Army installations.
- t. Issue implementing guidance with respect to endangered species critical habitat designation.
- u. Provide annual authorities for the forestry, agricultural/grazing, and hunting and fishing fee reimbursable programs.
- v. Serve as initial denial authority and acts on FOIA requests for records pertaining to environmental activities, other than litigation.
- w. Manage the Environmental Restoration, Army (ER, A) account.
- x. Manage environmental program responsibilities for base operations support (BOS) through the Office of the Director of Environmental Programs (ODEP). The ODEP will—
 - (1) Serve as the HQDA functional proponent for the Army Environmental Program (AEP).
 - (2) Provide HQDA oversight of the AEP that reflects overall Army compliance, stewardship, sustainability, and readiness priorities.
 - (3) Formulate and issue Army guidance and instructions for implementing and sustaining the AEP.
 - (4) Coordinate AEP requirements with all appropriate organizations to preclude conflicts, and to synchronize activities, among operations and training, real property management, and master planning.
 - (5) Identify, plan, program, budget, support, and defend military resource requirements for the AEP.
 - (6) Exercise primary Army staff (ARSTAF) responsibility to oversee, manage, and coordinate Army military

environmental programs as described in paragraphs 1–1a(1)–1–1a(20), including resource utilization and progress toward goals and objectives for II PEG funded programs.

- (7) Serve as the proponent for the Army Environmental Awards Program.
- (8) Establish the Configuration Control Management Board (CCMB) to advise the DEP on Army Environmental Reporting matters.
- (9) Develop guidance for implementation, utilization, and coordination of geospatial information and services within the environmental program.
- (10) Exercise primary ARSTAF responsibility to collect, coordinate, and integrate user requirements for the Army EQT Program through the Army Environmental Requirements and Technology Assessment (AERTA) process.
- (11) Participate in the EQT Teams to ensure the Army's EQT user needs are effectively addressed.
- (12) Provide guidance and recommendations on all issues directed to the ACSIM concerning policies and PPBE for the CC Program, Army DERP (including Installation Restoration Program (IRP) and MMRP), BRAC cleanup, and FUDS.
- (13) Provide general oversight, resource requirements verification, and guidance for the execution of the FUDS Program to ensure program execution consistent with the FUDS Charter.
- (14) Provide oversight of the Environmental Performance Assessment System (EPAS).
- (15) Serve as the Executive Secretary to the DOD Operational and Environmental Executive Steering Committee for Munitions (OEESCM) and the HQDA EQCC.
- (16) Serve as the chairman of the DOD Hazardous Waste Management Subcommittee.
- (17) Serve as co-chair of the ARSIC.
- (18) Execute EMS responsibilities per ISO 14001 and this regulation.
- (19) Monitor the execution of the AEP to conform to EMS.
- (20) Establish implementing guidance for Army environmental reporting systems.
- (21) Provide upward reporting on progress in meeting AEP goals and objectives to HQDA leadership, OSD, and Congress.
- (22) Develop appropriate Army-wide standards and metrics for the AEP.
- (23) Designate two ACSIM representatives as voting members on the Armed Forces Pest Management Board (AFPMB). Designate Army senior consultant (ASC) and DOD certification officials for Army civilian personnel per DOD policies and procedures.
- (24) Maintain an efficient and well-trained workforce.
- (25) Coordinate AEP strategic outreach.
- (26) Centrally manage the Conservation Reimbursable Forestry, Agricultural/Grazing Outlease, and Fish and Wildlife Conservation Programs; set installation specific Automatic Reimbursable Authority for forestry and agricultural/grazing at installations.

1–14. Commander, Installation Management Command

The Commander, Installation Management Command (IMCOM) will—

- a.* Execute sustainable base operations support for all installations under its purview in compliance with applicable laws and regulations (to include Final Governing Standards (FGS), and international agreements overseas) to support the Army training and testing mission.
- b.* Integrate program guidance, goals, and issue across installation functional areas (for example, logistics, environment, training, engineering, and planning).
- c.* Oversee management of installation environmental programs.
- d.* Provide program management reviews for the ACSIM and DASA (ESOH).
- e.* Monitor and track environmental performance of Regional Offices and the US Army Reserve.
- f.* Assist installations in the execution of the Army CC program.
- g.* Develop an annual program management plan (PMP), consistent with the Army Cleanup Strategy and Strategic Plan, for the CC Program.
- h.* Coordinate IMCOM issues that affect mission among senior mission commanders (SMCs), ACOMs, ASCCs, DRUs, and garrisons.
- i.* Coordinate the execution of the EPAS Program for the active Army through USAEC.
- j.* Participate in environmental awards activities as appropriate.
- k.* Review, analyze, perform quality assurance/quality control (QA/QC), and approve environmental requirements and data reported by installations.
- l.* Maintain an efficient and well-trained workforce.
- m.* Coordinate with the DCS, G–3/5/7, ACOMs, ASCCs, DRUs, and Directorate of Plans, Training, Mobilization, and Security (DPTMS) to ensure ITAM Program requirements are implemented in accordance with DAMO–TRS resource allocations and guidance.

- n.* Report progress in meeting AEP goals and objectives to HQDA leadership.
- o.* Provide guidance and assistance to garrisons and monitor the execution of IMCOM's portion of the AEP in accordance with EMS.
- p.* Assist IMCOM installations in negotiations with regulatory agencies to preclude adverse mission impacts or the inadvertent establishment of Army policy that may conflict with regulatory requirements.
- q.* Provide AEP technical implementation support through the Commander, USAEC, who will—
 - (1) Provide environmental technical products and services in support of Army training, operations, acquisition, and sound stewardship.
 - (2) Manage assigned elements of the Army Cleanup Program in accordance with ACSIM direction and guidance. Develop and execute an annual program management plan (PMP), consistent with the Army Cleanup Strategy and Strategic Plan, for the Army DERP.
 - (3) Provide technical support for pest management.
 - (4) Program for and coordinate execution of EPAS for the active Army.
 - (5) Provide program management for the Army DERP at active installations.
 - (6) Execute policy and guidance for Army environmental reporting systems.
 - (7) Provide technical support to the Chief, Training Support Systems Division, Office of the DCS, G-3/5/7 in support of the SRP core programs.
 - (8) Provide technical support and day-to-day operational oversight for Conservation Reimbursable Forestry, Agricultural/Grazing Outlease and Fee Collection Programs.
 - (9) Provide technical support to DASA (ESOH) in support of the ASARC and CRB.
 - (10) Provide technical support to the Army's EQT Program as it relates to installation issues.
 - (11) Provide outreach support to the AEP.
 - (12) Provide public affairs support to the AEP.
 - (13) Maintain an efficient and well-trained workforce.
 - (14) Provide Hazardous Material Management Program (HMMP) operational oversight to the DCS, G-4 for environmental hazardous material management.
 - (15) Perform data collection and analyses of HMMP environmental information to measure program success.

1–15. The Chief, Army Reserve

The Chief, Army Reserve (CAR) will—

- a.* Ensure environmentally sustainable operations.
- b.* Serve as the primary ARSTAF adviser for all Army Reserve mission-related environmental issues.
- c.* Ensure that Army environmental policy is implemented within the Army Reserve.
- d.* Ensure that environmental stewardship is incorporated into all aspects of the Army Reserve mission.
- e.* Coordinate with IMCOM on matters of mutual interest or concern.

1–16. National Guard Bureau - Director, Army National Guard

The National Guard Bureau – Director, Army National Guard (NGB-DARNG) will—

- a.* Execute environmentally sustainable base operations support in compliance with applicable laws and regulations to support the Army training and testing mission.
- b.* Ensure the NGB-DARNG acquires, manages and distributes resources; develops and administers policies and programs.
- c.* Serve as the "Channel of Communication" between the Army and the National Guard of the States, Territories and the District of Columbia.
- d.* Serve as the primary ARSTAF advisor for all ARNG environmental issues, and sign or appoint a designated representative to sign all ARNG Federal compliance agreements, consent orders, and environmental assessments, findings of no significant impact, and other pertinent Federal environmental documentation.
- e.* Coordinate with HQDA, State ARNGs, and other organizations to fulfill the NGB-ARNG's ARSTAF role as an Army component, the NGB-ARNGs role as the installation management organization for the State ARNGs, and the NGB-ARNG's role in performing ACOM, ASCC, or DRU functions.
- f.* Specific day-to-day responsibility for the environmental management program resides with the NGB-ARNG Chief of Environmental Programs (CEP). To carry out this responsibility, the NGB-ARNG CEP will—
 - (1) Ensure environmentally sustainable operations and planning.
 - (2) Ensure that Army environmental policy is implemented within the ARNG.
 - (3) Ensure that environmental stewardship is incorporated into all aspects of the ARNG mission.
 - (4) Integrate program guidance, goals, and issues across installation functional areas (for example, logistics, environment, training, engineering) and planning areas.

- (5) Submit environmental base support requirements to the OACSIM. Budget and execute environmental resources consistent with program needs.
- (6) Develop an annual program management plan (PMP), consistent with the Army Cleanup Strategy and Strategic Plan, for the Army CC Program; and provide program management reviews for the ACSIM and DASA (ESOH).
- (7) Provide supplemental implementing guidance and instructions consistent with HQDA guidance for environmental reporting to the states.
- (8) Report progress in meeting AEP goals and objectives to HQDA leadership.
- (9) Provide State ARNGs guidance and assistance, and monitor the execution of the NGB-ARNG's portion of the AEP in accordance with EMS.
- (10) Schedule and conduct all aspects of EPAS audits.
- (11) Review, analyze, perform QA/QC, and approve environmental reporting data submitted by NGB-ARNG installations.
- (12) Assist NGB-ARNG installations in negotiations with regulatory agencies to prevent adverse mission impacts due to Federal natural and cultural resources requirements.
- (13) Support environmental awards activities.
- (14) Maintain an efficient and well-trained workforce.
- (15) At Federally-owned or leased NGB-ARNG installations, facilities, activities and properties—
 - (a) Provide oversight and facilitate coordination in the remediation process.
 - (b) Assist in the management and execution of ER, A-funded NGB-ARNG remediation sites.
- (16) At Non-Federally-owned, Federally-supported NGB-ARNG installations, facilities, activities, and properties, provide guidance, planning, oversight, execution, monitoring, and reporting for NGB-ARNG cleanup sites.

1-17. The Judge Advocate General

The Judge Advocate General (TJAG) will provide legal advice to the Army on all environmental law matters, except those arising out of civil works (CW) and FUDS activities. The Chief, Environmental Law Division (ELD), will exercise those authorities on behalf of TJAG, and will specifically—

- a. Serve as legal advisor to the ACSIM and DEP with regard to all environmental matters.
- b. Advise the Army Secretariat in coordination with the General Counsel.
- c. Provide technical channel supervision, coordination, and advice to all Army lawyers involved in Army environmental matters.
- d. Monitor and provide advice regarding environmental legislation and regulatory developments that affect the Army.
- e. Review and render legal opinions on all draft environmental orders, consent agreements, and settlements with Federal, State, or local regulatory officials (except those arising from FUDS) before signature.
- f. Provide assistance to ACOMs, ASCCs, DRUs, IMCOM, NGB-ARNG, and installations in drafting or negotiating interagency agreements or orders on consent with Federal, State, and local regulators.
- g. Be responsible for representing the Army in Federal and State litigation and for communicating the Army's position in litigation and settlement with the Department of Justice subject to the general oversight of the General Counsel.
- h. Serve as agency counsel for the Army in appropriate administrative cases, hearings, and enforcement actions (ENFs).
- i. Serve as initial denial authority and act on FOIA requests for records pertaining to environmental activities when the records relate to litigation in which the United States has an interest.

1-18. The Surgeon General

The Surgeon General (TSG) will—

- a. Approve human health risk assessments and review environmental hazards and ecological risk assessments.
- b. Provide policy on the human health aspects of Army installation activities and operations, to include those aspects associated with environmental contamination.
- c. Integrate environmental awareness and technical information into the training programs sponsored by the Army Medical Department (AMEDD).
- d. Serve as the Lead Agent for the DOD and as the Army representative in negotiating services with the Agency for Toxic Substances and Disease Registry (ATSDR).
- e. Develop toxicological profiles concerning chemicals and hazardous substances commonly found on military installations. Develop and propose human health and safety environmental standards for chemical agents and explosive compounds, and other unregulated compounds when such standards do not exist.
- f. Identify pollution-related health and ecological effects topics requiring research and development; and initiate needed research in areas where AMEDD has responsibility and provides toxicological and exposure data when required to support human health risk assessments.

g. Advise on human health aspects of environmental issues, including the “known and imminent substantial endangerment” (KISE) determination for environmental response actions overseas.

h. Provide technical assistance relating to health and, as requested, on environmental aspects of programs and initiatives.

i. Coordinate on the human and ecological health risk assessment portions of active installations, BRAC, and FUDS decision documents (DDs).

j. Promulgate policy for the disposition of dental, veterinary, medical, and pharmaceutical waste.

k. Provide two representatives as voting members on the AFPMB and designate personnel to serve as DOD pest management certification officials for Army uniformed personnel per DOD policies and procedures.

l. Coordinate with OACSIM for surveillance, prevention, and control of medically important pests and disease vectors and occupational health exposures from pest management operations.

m. Provide health and environmental risk communication support to all Army assets, to include training, consultation, conflict management, and facilitation.

n. Develop policy on occupational and public health issues related to Army environmental actions.

o. Through the U.S. Army Medical Command (MEDCOM) and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) will—

(1) Plan, organize, budget, and execute medical support to the Army environmental program.

(2) Serve as the decision authority for determinations of public health threat arising from Army environmental activities.

(3) Provide a broad range of expertise and services in environmental health, occupational health, and preventive medicine to evaluate the health aspects of the Army’s environmental program.

(4) Provide environmental health support in all environmental media to Army and other DOD elements, as requested.

(5) Assist in the maintenance of the Military Item Disposal Instructions (MIDI) for the DOD.

(6) Provide preventive medicine leadership and services to anticipate, identify, assess and counter environmental and occupational health threats.

(7) Provide environmental health and occupational health expertise, products and services in support of training, operations, acquisition, research and development to assess the health risks associated with Army environmental programs and activities.

(8) Support USAEC with coordination and execution of the EPAS Program.

1–19. Army Command, Army Service Component Command, and Direct Reporting Unit commanders

The ACOM, ASCC, and DRU commanders, including those outside the continental United States (OCONUS), as used in this regulation, include the Director, NGB–ARNG when performing an ACOM, ASCC, or DRU role relative to State ARNGs, the State Adjutants General when performing an ACOM, ASCC, or DRU role relative to State ARNGs, and major subordinate commands (MSC). The ACOM, ASCC, and DRU commanders will—

a. Consistent with HQDA policy, provide oversight, policy, guidance, and resources to subordinate commands and activities to execute mission-related aspects of the Army’s environmental program, to include: training and deployments; industrial operations; research, technology, and testing activities; operations other than war; and other operations and activities not falling under the direct control of supporting Garrison/Installation commanders.

b. Ensure that subordinate units comply with the policies and standards of the installations on which they are tenants.

c. Ensure that all subordinate units comply with all applicable laws, regulations, internal directives and goals, EOs, and overseas FGS.

d. Fully integrate environmental considerations into ACOM, ASCC, and DRU mission requirements.

e. Participate in and fully support all installation internal and external assessments and audits, and implement corrective actions.

f. Support environmental awards activities.

g. Ensure that assigned environmental staff is efficient and well-trained.

h. ACOM, ASCC, and DRU commanders that exercise command and control of installations will execute the same responsibilities listed under paragraph 1–13, Commander, IMCOM, with the following exceptions:

(1) Environmental requirements must be submitted through the ACOM, ASCC, DRU, and NGB–ARNG chain of command unless otherwise specified in the ISSA.

(2) ACOM, ASCC, and DRU commanders must monitor and track environmental performance at subordinate installations.

i. Additionally, the Commander, U.S. Army North (USARNORTH) will—

(1) Provide, upon request, personnel/resources support to the National Response Team (NRT) or Regional Response Team (RRT) responding to an environmental emergency. The requester will reimburse the cost of the support.

(2) Serve as the lead for all phases of mobilization, deployment/redeployment operations, and environmental support activities related to national emergencies.

1–20. The Commanding General, U.S. Army Forces Command

The Commanding General (CG), and U.S. Army Forces Command (FORSCOM) will—

- a. Incorporate environmental planning requirements in mobilization guidance as appropriate.
- b. Coordinate with IMCOM and DCS, G–3/5/7 on environmental support for mission activities, to include training exercises, range operations, and mission MILCON projects.
- c. Provide explosive ordnance disposal (EOD) units for emergency response activities.

1–21. The Commanding General, U.S. Army Materiel Command

The Commanding General, U.S. Army Materiel Command (CG, AMC) will—

- a. Provide technical assistance to acquisition program managers and program executive offices as required to ensure integration of environmental quality considerations in all aspects of acquisition programs and weapons system's life cycle, such as acquisition, maintenance, disposal, and demilitarization.
- b. Conduct environmental research, development, testing, and evaluation and technical investigations in support of its missions and activities.
- c. Support ASA (ALT) efforts to develop an integrated Army Environmental Quality Science and Technology program, and manage the portion of that program that supports acquisition, logistics, and industrial base user needs.
- d. Coordinate acquisition, logistics, and industrial base user needs with the USACE and the ACSIM in areas impacting installation EQT.
- e. Execute low-level radioactive waste (LLRW) management, including disposal.
- f. Ensure that contracts include provisions for operations at government-owned, contractor-operated (GOCO) facilities to meet and remain compliant with environmental legal mandates and protect the Army from liability and/or fines assessed due to contractor operations.
- g. Review and revise military specifications, standards, and drawings, when appropriate, to eliminate and/or reduce the use of extremely hazardous substances and toxic chemicals. Coordinate this effort with other program offices as required.
- h. Conduct ACOM responsibilities for installations under its purview (see para 1–19).

1–22. The Commanding General, U.S. Army Training and Doctrine Command

The Commanding General, U.S. Army Training and Doctrine Command (CG, TRADOC) will—

- a. Ensure the development and implementation of environmental training and doctrine programs and products that support military training and readiness operations are consistent with regulatory requirements and Army environmental policies.
- b. Ensure that the U.S. Army Engineer School solicits and prepares environmental training packages as required for Soldiers and makes them available on-line through Army Knowledge Online (AKO) and/or other appropriate websites.
- c. Ensure requirements documents incorporate environmental resources sustainment and lessons learned into all appropriate Army and Joint doctrinal publications and references.
- d. Ensure all training procedures, training manuals, training doctrine, and requirements documents include sound environmental practices and procedures.
- e. Coordinate with the OACSIM regarding establishment of staffing or training standards for all modified tables of organization and equipment (MTOE) and tables of distribution and allowances (TDA) unit designated environmental officers. Ensure environmental officer responsibilities are consistent with regulatory requirements and Army environmental policies.
- f. Ensure organizations/units are designed with equipment and personnel to meet established environmental requirements.

1–23. Senior mission commanders

Senior mission commanders (SMC) will—

- a. Comply with installation policies, applicable Federal, State, and local environmental laws, regulations, EOs, and overseas FGS and signed agreements.
- b. Participate in the installation's planning, sustainability efforts, and EMS.
- c. Designate a representative to the Environmental Quality Control Committee (EQCC).
- d. Ensure personnel receive appropriate environmental training.
- e. Coordinate testing and fielding of technology with the garrison commander (GC).
- f. Participate in and fully support all installation internal and external assessments and audits, and implement corrective actions.

- g.* Fund environmental requirements not covered in the standard installation services or the ISSA (this does not apply to military units).
- h.* Appoint trained environmental officer(s) to ensure operational compliance and coordination with installation environmental staff.
- i.* Immediately report spills or releases of petroleum, hazardous substances, or hazardous waste (HW) to the GC.
- j.* Participate in the development of integrated natural and cultural resources management plans to ensure they are compatible with and support the mission.
- k.* In conjunction with the GC, ensure environmental requirements that impact ranges and training land are incorporated into the installation range complex master plan.
- l.* Where appropriate, coordinate with JALS-EL early on all environmental agreements, including but not limited to, fine and penalty settlement agreements, prior to signing them.

1-24. Garrison commanders

Garrison commanders (GC) as used in this regulation include commanders of USAR Regional Readiness Support Commands (RRSCs), State Adjutants General relative to the concept of the State as an installation, OCONUS U.S. Army Garrisons, and GCs as appropriate as determined by the IMCOM, Headquarters NGB-ARNG, and State Adjutants General. The GC will—

- a.* Ensure that Base Support activities support military training and readiness operations, enhance mission accomplishment, and are conducted in a manner conducive to environmental stewardship (see para 1-1a).
- b.* Comply with applicable Federal, State, and local environmental laws, regulations, internal directives and goals, EOs, and overseas FGS.
- c.* Investigate regulatory enforcement actions, complaints, and spills/releases, and correct systemic problems. Document investigation, negotiation, and resolution of enforcement actions and submit through the respective chain of command to ODEP, and through technical legal channels to JALS-EL.
- d.* Ensure environmental requirements that impact ranges and training land are identified and incorporated into the installation range complex master plan. Ensure the affected SMC is made aware of these impacts.
- e.* Ensure installation activities incorporate applicable environmental requirements into all procurement actions.
- f.* Apply for, sign, arrange funding, and maintain all applicable Federal, State and local environmental permits. Incorporate potential mission surge conditions when applying for environmental permits.
- g.* Maintain appropriate environmental records as required by law.
- h.* Record enforcement actions within 48 hours via the Army Environmental Reporting Online (AERO).
- i.* Coordinate with JALS-EL early on all environmental agreements, including but not limited to, fine and penalty settlement agreements, prior to signing them. GCs may not delegate approval or signature authority.
- j.* Ensure that compliance agreements and consent orders that are attributable to a tenant's mission and/or operations are coordinated through applicable legal and command channels to determine the appropriate funding activity.
- k.* Assess the long-term resource impacts of all environmental agreements. Coordinate resource implications for agreements through command channels to IMCOM, NGB-ARNG, ACOMs, ASCCs, or DRUs as appropriate prior to approval.
- l.* Ensure that non-DOD HM (that is, HM owned and/or used by non-DOD entities) is not stored, treated, or disposed of on the installation unless approved by the ASA (I&E), his or her designee, or higher authority.
- m.* Ensure that the installation strategic planning office (or equivalent) incorporates sustainability principles into strategic and other installation management plans; coordinate installation strategic plans with the SMC prior to finalization.
- n.* Implement an installation-wide Hazardous Materials Management Program (HMMP).
- o.* Promote recycling/reuse programs and Green Procurement policies.
- p.* Organize and chair the installation EQCC.
- q.* Organize and chair the installation Technical Review Committee/Restoration Advisory Board (TRC/RAB), as required.
- r.* Implement and maintain a mission-focused EMS in accordance with the ISO 14001 standard. Third party registration to the standard is not required, and environmental funds will not be used for this purpose. However, GCs may pursue third party registration when it provides clear and documented mission benefits.
- s.* Champion the installation EMS and designate an EMS representative in the appropriate organizational planning cell; ensure all planning incorporates the requirements of the EMS.
- t.* Participate fully in EPAS, conduct annual internal environmental compliance assessments, and coordinate assessments with all tenants.
- u.* Prepare and execute the installation corrective action plan (ICAP); coordinate and monitor completion of installation-wide corrective actions.
- v.* Ensure all environmental program plans are completed and implemented per guidance in chapter 3.

- w. Designate personnel who are responsible and accountable for executing major program requirements as prescribed in chapters 4 through 14.
- x. Deposit all proceeds from Conservation Reimbursable Programs as outlined in Section 2665, Title 10, United States Code (10 USC 2665); Section 2667, Title 10, United States Code (10 USC 2667); and Sections 670a and 670b, Title 16, United States Code (16 USC 670a and 670b, Sikes Act).
- y. Serve as the Federal Agency Official with responsibility for installation compliance with the Native American Graves Protection and Repatriation Act (NAGPRA).
- z. Establish government-to-government relations with Federally recognized Indian Tribes and Native Alaskans.
 - aa. Maintain a public affairs program that encourages public involvement.
 - ab. Ensure that the installation master plan incorporates environmental considerations.
 - ac. Identify environmental requirements, forward through command channels, and maintain auditable records.
 - ad. Execute the environmental budget to meet critical requirements.
 - ae. Maintain an efficient and well-trained environmental staff.
 - af. Ensure that Army law enforcement personnel are trained in conservation law enforcement where appropriate.
 - ag. Ensure that sufficient numbers of professionally trained natural resource management personnel and natural resources law enforcement personnel are available and assigned the responsibility to perform tasks necessary to comply with Section 670e, Title 16, United States Code (16 USC 670e).
- ah. Approve record of decision (ROD)/decision documents (DDs) for environmental response actions within delegated approval authority.
- ai. Approve integrated natural resource management plans (INRMPs).
- aj. Hold tenant units accountable for complying with the policies and standards of the installation.
- ak. Approve annual reports of availability (ROA) for timber sales after review by higher headquarters and USAEC.
- al. Designate an installation wildland fire program manager and approve the integrated wildland fire management plan.

1–25. Medical Department Activity/Medical Center/Health Service Support Area commanders

The Medical Department Activity/Medical Center/Health Service Support Area (MEDDAC/MEDCEN/HSSA) commanders will—

- a. Comply with applicable Federal, State, and local environmental laws, regulations, EOs, and overseas FGS.
- b. Manage and dispose of non-*Resource Conservation and Recovery Act* (RCRA) Subtitle C medical, dental, veterinary, pharmaceutical and regulated medical wastes in accordance with AR 40–5 and applicable regulations.
- c. Verify disposal requirements via the MIDI system updated and maintained by USACHPPM.
- d. Ensure that regulated medical waste manifests are only signed by those individuals who have been appropriately trained and are authorized in writing by the activity commander or supervisor.
- e. Appoint a trained environmental officer to ensure operational compliance and coordination with installation environmental staff, to include the coordination of medical waste management plans.
- f. Advise on health aspects of the installation environmental program, and provide technical consultation and support services.
- g. Identify environmental requirements, forward through command channels, and maintain auditable records.

1–26. Tenants

A tenant is an authorized activity located on an installation that is not part of the garrison organization. This includes, but is not limited to, military units, the Army and Air Force Exchange Service (AAFES), and the Defense Commissary Agency (DeCA). Tenants will—

- a. Comply with installation policies, applicable Federal, State, and local environmental laws, regulations, EOs, and overseas FGS.
- b. Establish an ISSA with the GC that addresses environmental oversight, to include funding responsibilities and facility access (this does not apply to military units).
- c. Participate in the installation's planning, sustainability, and EMS (note, however, that installations should evaluate their liabilities concerning non-governmental tenants to determine whether any of them can be exempted from the installation EMS).
- d. Designate a representative to the EQCC.
- e. Ensure personnel receive required environmental training.
- f. Participate in all installation internal and external assessments and audits, to include programming for corrective actions.
- g. Fund environmental requirements not covered in the standard installation services or the ISSA (this does not apply to military units).
- h. Identify and submit environmental requirements to the supporting ACOM, ASCC, DRU/higher headquarters (this does not apply to military units).

- i. Identify and coordinate non mission-specific environmental requirements with the GC.
- j. Pay environmental fines and penalties resulting from their mission activities.
- k. Immediately report spills or releases of hazardous substances to the on-scene coordinator (OSC). Pay or reimburse costs associated with cleanup and spill response if not covered in the standard installations services or the ISSA.
- l. Report all instances of non-compliance and notification of enforcement actions to the GC immediately.
- m. Ensure that non-DOD hazardous material is not stored, treated, or disposed of on the installation unless approved by the OASA (I&E), his or her designee, or higher authority.

1–27. Commanders of Government-Owned, Contractor-Operated facilities

The Commanders of Government-Owned, Contractor-Operated (GOCO) facilities will—

- a. In coordination with the contracting officer, ensure that contracts include provisions for operations at GOCO facilities to meet and remain compliant with environmental legal mandates to protect the Army from liability and/or fines assessed due to contractor operations.
- b. Comply with installation policies, applicable Federal, State, and local environmental laws, regulations, and EOs.
- c. Ensure that contractors assume responsibility for management and disposal of contractor-generated solid and HW.
- d. Ensure that non-DOD hazardous material is not stored, treated, or disposed of on the installation unless approved by the OASA (I&E), his or her designee, or higher authority.
- e. Deposit all proceeds from Conservation Reimbursable Programs as outlined in 10 USC 2665, 10 USC 2667, and 16 USC 670b.
- f. Execute EMS responsibilities in accordance with contract provisions.
- g. Assess the long-term resource impacts of all environmental agreements in coordination with the acquisition community. Coordinate resource implications for agreements through command channels as appropriate prior to approval.
- h. Ensure that all contractor personnel receive appropriate levels of training on environmental awareness, hazardous material/waste management, and the installation EMS.

1–28. Unit commanders

The unit commanders will—

- a. Instill an environmental ethic in soldiers and civilians under their command.
- b. Ensure personnel receive required environmental training.
- c. Comply with installation policies, applicable Federal, State, and local environmental laws, regulations, EOs, and overseas FGS.
- d. Report noncompliance and spills through appropriate channels to the GC.
- e. Incorporate environmental responsibilities and environmental risk management into unit SOPs and operation orders (OPORDs) as appropriate; integrate environmental considerations into the planning and execution processes in accordance with FM 3–100.4.
- f. Appoint and train environmental officers at appropriate organizational levels to ensure compliance actions take place (see FM 3–34.500 for environmental officer responsibilities).
- g. Support the installation-wide EMS.

Chapter 2 Environmental Policy

2–1. Commitment to Environmental Stewardship

- a. The Army is committed to environmental stewardship in all actions as an integral part of its mission and to ensure sustainability.
- b. This regulation supports the *Army Strategy for the Environment*, 1 October 2004, which presents the Army's environmental vision as sustainable operations, installations, systems, and communities enabling the Army mission. Under the strategy, the Army's environmental mission is to sustain the environment to enable the Army mission and secure the future. In doing so, all Army organizations and activities will—
 - (1) Foster an ethic within the Army that takes us beyond environmental compliance to sustainability.
 - (2) Strengthen Army operational capability by reducing our environmental footprint through more sustainable practices.
 - (3) Meet current and future training, testing and other mission requirements by sustaining land, air, and water resources.
 - (4) Minimize impacts and total ownership costs of Army systems, materiel, facilities, and operations by integrating the principles and practices of sustainability.

(5) Enhance the well being of our soldiers, civilians, families, neighbors, and communities through leadership in sustainability.

(6) Use innovative technology and the principles of sustainability to meet user needs and anticipate future Army challenges.

2-2. Army Environmental Policy Statement

a. All Army organizations and activities will comply with applicable Federal, State, and local environmental laws, regulations, executive orders (EOs), or overseas Final Governing Standards (FGS) (see para 15-8 for additional specific overseas requirements); develop and implement pollution prevention and control strategies; and establish environmental priorities in consideration of the benefits to the sustainment of missions and operations.

b. All Army organizations and activities will strive to achieve continual improvement in overall environmental performance and supporting management systems.

c. All Army organizations will ensure that this policy is implemented, maintained, and communicated to all military and civilian employees and supporting contractors. In addition, this policy will be made readily available to the public upon request.

d. All contracts and contract modifications will specify that contractors are liable for any enforcement actions, fines, and/or penalties resulting from their failure to comply with applicable environmental requirements.

2-3. Legal Requirements

All references to legal requirements in this regulation are intended to refer to laws, regulations, and executive orders that, in the opinion of legal counsel, are applicable to the Army. While most environmental laws apply to the Army, some include exemptions (or provisions for requesting exemptions) for military activities under certain conditions. It is essential that Army counsel, including but not limited to the Office of the Judge Advocate General, Army Environmental Law Division, JALS-EL), be consulted on the applicability of all laws, regulations, initiatives, and executive orders. Similarly, all permits, agreements, notices of violations, enforcement actions, especially reports of potential liability under paragraph 16-4, require early and close coordination with Army legal counsel that is responsible for direct support to the command or activity. As necessary, legal counsel at the installation level will coordinate issues and positions within the appropriate Army legal chain. Precedent-setting opinions, all enforcement actions, and agreements must be coordinated with JALS-EL. The requirement to consult with legal counsel supporting a command or activity is considered an essential part of effectively using this regulation. Additionally, this regulation prescribes program requirements in terms of "will" and "must", which mean that the actions are mandatory. All Army organizations will incorporate environmental considerations and requirements into all aspects of the organization's mission.

Chapter 3 Planning and Implementation

3-1. Installation strategic planning

a. Environmental considerations must be incorporated into installation plans, including installation strategic plans. Installation strategic planning incorporates the concepts and philosophy of sustainability, the ultimate objective in strategic planning, and must be applied to and supported by all functional areas within the command.

b. Installation strategic planning is the long-term planning process that establishes the baseline and direction for all other plans and planning processes, including real property master plans (RPMPs), human resource plans, information technology (IT) and knowledge management plans, environmental management plans, functional business plans, etc. Guidance for these plans is provided by Headquarters, Installation Management Command (HQ, IMCOM), National Guard Bureau - Army National Guard (NGB-ARNG), and for special installations, owning Army Commands (ACOMs), Army Service Component Commands (ASCCs) and Direct Reporting Units (DRUs). This includes synthesizing and aligning pertinent information from The Army Plan, Army strategic planning guidance, Army programming and budgeting guidance, policies, and other sources of strategic guidance with the organizational mission, vision, values, principles, strategy maps, balanced scorecards, and so forth. The garrison commander (GC) applies this guidance to his or her own operations through the installation strategic planning process.

3-2. Activities, products, and services

a. The Army mans, equips, trains, sustains, mobilizes, deploys, and demobilizes the force as needed to support the combatant commanders.

b. Achieving the foregoing requires the Army to undertake a number of activities and to provide various products and services that include, but are not limited to (listed by mission/functional area):

(1) Weapons System Acquisition - including the major systems acquisition phases of concept and technology development, system development and demonstration, production and deployment, operations and support, and demilitarization and disposal.

(2) Logistics Support - including the acquisition, storage, distribution, and recovery of all classes of supply; maintenance of materials and equipment; transportation of personnel and materiel; and provision of support services such as food, commissaries, laundries, and property disposal.

(3) Training - including providing and conducting individual, functional, and organizational (both tactical and non-tactical) training.

(4) Infrastructure Development and Maintenance - including the total system of facilities; buildings; structures; horizontal transportation facilities (roads, railroads, bridges, dams, and airfields); utility, transport, and communication systems; ranges and other training areas; ports; airfields, and associated lands and equipment; and facilities (that is, real property) operation and maintenance, to include utilities, minor construction, and general engineering support.

(5) Industrial Operations - including the manufacture of commodities, equipment, and weapons systems.

(6) Base Operations Support - including all of the activities required to accomplish the missions and functions of assigned and tenant units and activities at the installation level.

(7) Health and Medical Support - including providing general health care and medical and dental support to personnel, as well as the operation and maintenance of Army hospitals, medical centers (MEDCENs), dental and veterinary clinics, medical treatment facilities, and supporting laboratories.

(8) Transportation Equipment - including tactical and non-tactical vehicles, fixed and rotary wing aircraft, rail systems, watercraft, and supporting maintenance operations.

(9) Mobilization and Deployment - including the assembly and organization of material and personnel resources in response to war or other emergencies including low intensity conflict and military operations other than war, and the physical movement of those resources to the theater of operations.

(10) Research, Development, Test, and Evaluation (RDT&E) - including the demonstration/validation and technology transfer of materiel, equipment, and weapons systems at Army proving grounds, laboratories, and related facilities.

3-3. Important environmental aspects

a. Environmental aspects are elements of products, activities, or services that interact with the environment. Important environmental aspects are those that result in mission or environmental impacts, and may include, but are not limited to:

(1) Air emissions (fugitive or from stacks), including but not limited to, Clean Air Act criteria pollutants (carbon dioxide, nitrous oxides, sulfur oxides, ozone, particulates, and lead), combustion gases, volatile organic compounds (VOCs), and hazardous air pollutants (HAPs).

(2) Generation of noise, vibration, odor, dust, heat, mold, light, radiation, and other nuisance activities.

(3) Discharges and disposals (point and non-point), spills, or other releases to soil or ground and/or surface waters, including sewage, sediment, or solid, hazardous, and other wastes.

(4) Natural resource alteration (that is, consumption or conservation), including water, timber, minerals, soil, and so forth. This includes the acquisition of goods and services that affect the consumption of natural resources.

(5) Ecological resource alteration, including wetland and endangered species protection or destruction.

(6) Cultural resource alteration, including historic properties; archeological sites; sacred sites; and properties of traditional cultural or religious importance to American Indians, Alaska Natives, and Native Hawaiians.

(7) Energy consumption or conservation, including electricity, fossil, alternative fuels, and renewable energy, such as solar energy.

b. All appropriate facilities (see glossary) will establish and maintain procedures to identify the environmental aspects of their operations, activities, products, or services that they can control and over which they can be expected to have an influence, to determine which have or can have impacts on the mission and/or the environment. This will include maintaining scientifically defensible information and inventories of facilities, resources, and environmental aspects, including geospatial information where the spatial location and extent of these affects their impact to mission and/or the environment. Installations must evaluate their liabilities concerning non-governmental tenants to determine whether any of them can be exempt from the installation EMS.

c. The aspects related to those important impacts will be considered in setting environmental objectives at all appropriate organizational levels. Additionally, appropriate facilities will consider processes for external communications on their important environmental aspects and document their decision regarding external communications.

d. Acquisition program managers should ensure that weapons systems are designed so that they can be tested, operated, maintained, repaired, and disposed of in accordance with applicable environmental, safety, and occupational health statutes, regulations, policies, and environmental treaties and agreements. (see PD: DODD 5000.1)

3-4. Environmental objectives and targets

a. An environmental objective is an overall environmental goal, arising from the environmental policy, which an organization sets for itself to achieve, and which is quantified where practicable (for example, reduce hazardous waste (HW) disposal by a certain amount). An environmental target is a detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, that arises from the environmental objectives and that needs

to be set and met to achieve those objectives (for example, reduce HW disposal by a certain amount by a certain point in time). Environmental objectives and targets will be developed in consideration of impacts on Army operations.

b. Installations/activities will establish and maintain environmental objectives and targets for all operations and activities having the potential for important mission and/or environmental impact. Objectives and targets will be established at each relevant function and level within the organization, will be documented, and will meet DOD Measures of Merit (MOMs), Army-level program goals, objectives, and targets; long-term strategic goals; legal and other requirements; important environmental aspects; technological options; financial and operational requirements; and the views of interested parties, as appropriate.

c. Headquarters, Department of the Army (HQDA) will disseminate detailed Army-level program goals, objectives, and targets through periodic publication and update of appropriate plans, directives, and guidance documents.

3–5. Operational controls

a. Installations/activities will identify those operations and activities that are associated with important environmental aspects (see para 3–3a) and manage them consistent with established policies, objectives, and targets.

b. Installations/activities will establish and maintain documented standing operating procedures (SOPs) to avoid unacceptable environmental impacts from these operations and activities.

c. Contracting officers should ensure that contract provisions are consistent with SOPs.

3–6. Emergency preparedness and response

a. Installations/activities will establish and maintain procedures to identify the potential for and to respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them. These procedures will be tested periodically.

b. Installations/facilities will review and revise, where necessary, emergency preparedness and response procedures. In particular, critical reviews and revisions should be conducted after any occurrence of accidents or emergency situations.

3–7. Management programs

a. Appropriate facilities will establish and maintain management programs (see chaps 4 -14) for achieving objectives and targets, and will track and measure progress toward achieving them.

b. As a minimum, management programs will designate responsibility for achieving objectives and targets at each relevant function and organizational level, and specify the means and timeframe by which they are to be achieved.

c. Appropriate facilities will track their targets and objectives to measure continual improvement.

Chapter 4

Environmental Asset Management

Environmental assets entrusted to the Army's care include, but are not limited to, air, water, land, and natural and cultural resources. Specific DOD and Army policies, legal and other requirements, major program goals, and program requirements associated with environmental resources are presented in this section. The Office of the Assistant Chief of Staff for Installation Management (OACSIM) and the Office of the Director of Environmental Programs (ODEP) are responsible for environmental program policy implementation and Headquarters, Department of the Army (HQDA) level program oversight. The Installation Management Command (IMCOM) and National Guard Bureau - Army National Guard (NGB-ARNG) are responsible for executing environmental program requirements prescribed herein in accordance with this regulation and applicable federal, state, and local requirements. Technical support for addressing the various requirements prescribed in this section is the responsibility of the appropriate program offices within the U.S. Army Environmental Command (USAEC), U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA (ALT)) Environmental Support Office (ESO), and the Military Programs Directorate of the U.S. Army Corps of Engineers (USACE).

4–1. Air resources

a. *Policy.*

(1) Comply with applicable Federal, State and local air quality regulations, permit requirements, and overseas Final Governing Standards (FGS).

(2) Identify and implement cost-effective pollution prevention measures that will reduce toxic or criteria air emissions.

(3) Eliminate dependency on ozone depleting substances (ODS).

b. *Legal and other requirements.* Section 7401, Title 42, United States Code (42 USC 7401, et seq., Clean Air Act (CAA), as amended); Section 6901, Title 42, United States Code (42 USC 6901, et seq., the Resource Conservation

and Recovery Act of 1976 (RCRA), as amended); the Energy Policy Act of 2005; applicable State and local requirements; or country-specific FGS requirements.

c. Major program goal. Achieve and maintain air quality standards to protect human health and the environment, while minimizing mission impacts.

d. Program requirements.

(1) Assess the need for and obtain necessary CAA Title V Operating Permits and all other applicable permits. (LD: 40 CFR 71.1)

(2) Update existing or obtain new permits as needed when planning to modify, construct, install, or remove from service an emissions source that is, or should be, regulated under a Title V or other permit. (LD: 40 CFR 71.6)

(3) Perform air emissions inventories as required by statute, regulation, permit, or country-specific FGS. (LD: 40 CFR 51; 40 CFR 70.6; 40 CFR 71.6; FGS)

(4) Determine the need to comply with New Source Performance Standards, New Source Review for Non-attainment, or for Prevention of Significant Deterioration (PSD). In addition, determine the need to perform a Conformity Determination. (LD: 40 CFR 51.307)

(5) Cooperate with Federal, State, and local authorities to achieve the goals of implementation plans. (LD: 40 CFR 51)

(6) Perform technology, permitting, and preconstruction assessments as required before beginning construction or reconstruction of air emissions sources. (LD: 40 CFR 51.160 and related State regulations)

(7) Establish a Risk Management Program and develop and maintain a risk management plan (RMP) when required under Section 112(r) of the CAA. (LD: 40 CFR 68.150–195)

(8) Implement and maintain plans to eliminate dependency on commercial acquisition of Class I ODS. (LD: 40 CFR 82)

(9) Reduce all ODS use to zero as cost-effective substitutes that meet applicable standards become available. (LD: 40 CFR 82)

(10) Recovered Class I ODS cannot be bartered, sold, or traded. Return recovered ODS that are excess to installation needs to the DOD ODS Reserve. (LD: 40 CFR 82)

(11) Coordinate natural resources activities having potential air quality impacts (for example, prescribed burning) with appropriate State and local officials.

(12) Comply with applicable Standards of Performance for New Stationary Sources and corresponding monitoring requirements. (LD: 40 CFR 60)

(13) Comply with all air toxics regulations, to include, but not limited to, applicable National Emission Standards for Hazardous Air Pollutants (NESHAP) maximum achievable control technology (MACT) requirements for regulated sources of hazardous air pollutants (HAPs). (LD: 40 CFR 63)

(14) Overseas installations will comply with permits obtained on their behalf in accordance with the FGS.

4–2. Water resources

a. General policy.

(1) Comply with applicable Federal, State, and local laws and regulations regarding water resources management and permitting. Overseas, the Army will comply with country-specific FGS requirements.

(2) Obtain and comply with all required Federal, State, and local Clean Water Act (CWA), Coastal Zone Management Act (CZMA), and Safe Drinking Water Act (SDWA) permits (includes wastewater and storm water permits, operational permits for drinking water systems, groundwater discharge permits, wetland 404/401 permits, septic system permits, underground injection control, and so forth).

(3) Overseas installations will comply with permits obtained on their behalf in accordance with the FGS.

(4) Identify and implement pollution prevention initiatives.

(5) Participate with regional authorities in the development and implementation of water resource initiatives and plans.

(6) Mitigation wetlands are wetlands that replace the functions performed by drained, filled, or degraded wetlands on installation project sites. They should, whenever possible, be sited within the same watershed as the affected installation wetlands and outside installation boundaries so installations can retain maximum land-use flexibility.

b. Recreational waters. Management of recreational waters at military installations will be in accordance with AR 40–5, TB MED 575, and TM 5–662.

c. Water resource protection and management.

(1) All Army organizations and activities will comply with legally applicable Federal, State, and local regulations, executive orders (EOs), and FGS to conserve, protect and restore surface water resources (including wetlands, estuaries, streams, lakes and so forth), and groundwater (wells and aquifers).

(2) Executive Order 11988 and EO 11990 address the actions Federal agencies take to identify and protect flood plains and wetlands, respectively.

(3) The CZMA requires that activities within the coastal zone of any state must be consistent with the state's coastal zone management plan.

d. Watershed management.

(1) *Policy.* Installations use a watershed management approach when evaluating projects and programs to satisfy environmental regulations, facility projects, and master planning that may impact the quality of water resources. Using a watershed approach means that installations should develop a framework or plan for coordinating, integrating and managing their mission activities that impact the quality of water resources located on (and those that migrate off) their installation. This approach also requires a strong commitment to involving stakeholders, both internal and external, in the management of these water resources. To implement applicable total maximum daily load (TMDL) regulations, all Army facilities will:

(a) Initiate and maintain contact with Federal and State water regulators concerning the process of setting TMDLs and allocations for water bodies located on or passing through Army installations.

(b) Integrate all aspects of CWA requirements, programs and available information (for example, the National Pollutant Discharge Elimination System (NPDES) program, 404 wetlands program, wellhead protection, storm water plans/projects, storm water construction permits, spill prevention, control, and countermeasures (SPCC) plans/projects, State CWA 319 requirements (State plans & strategies for reducing non-point source runoff)) with TMDL development and future planning. Ensure all of these programs are consistent with, and work together to attain compliance under, TMDL allocations once they are set by states.

(c) Ensure that activities required to meet other environmental legal requirements, like RCRA, that impact water quality in an impaired water or are impacted by an impaired water (for example, Chapter 35, Title 16, United States Code (16 USC Chapter 35)) are informed of CWA requirements. These non-CWA activities should be integrated into the management plan.

(d) Ensure other programs that are or may have their activities affected by identification of impaired waters and new TMDL allocations are informed of the impacts and requirements (for example, facilities construction, master planning, National Environmental Policy Act (NEPA) requirements).

(e) Ensure that watershed assessments and management plans are integrated with the installation master plan, integrated natural resources management plan (INRMP), and other plans as appropriate.

(f) Establish and integrate environmental education and participation programs required by CWA/SDWA/the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)/ESA and so forth for all Army personnel and their families based on watershed concepts and requirements to restore impaired waters and maintain designated uses of local water bodies.

(g) Ensure that mission and non-mission activities and construction designs utilize best management practices (BMPs) to minimize TMDL impacts.

(2) *Legal and other requirements.* The principal applicable laws governing water resource protection and management are the CWA, SDWA, and related Federal, State, and local implementing regulations; and for overseas installations, the country-specific FGS requirements.

(3) *Major program goal.* Implement the "Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management". (PD: Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, 65 FR 62565–62572, 18 October 2000).

(4) *Program requirements.*

(a) Assess installation watershed impacts as appropriate, considering upstream and downstream water quality data or other background levels, proximity to potentially designated impaired waters, and any effects on mission activities. (PD: Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, 65 FR 62565–62572, 18 October 2000)

(b) Carry out Army activities consistent with EPA/State approved plans/strategies to restore impaired or threatened water bodies to their designated use. (LD: 40 CFR 130.12)

(c) Control soil erosion in accordance with applicable and appropriate Federal, State, or local requirements. (LD: 40 CFR 122.26)

(d) Comply with all applicable and appropriate State Source Water Assessment and Protection Program requirements as they relate to ground water (for example, wellhead protection plans) (LD: SDWAA 1996, PL 104–182, Sections 1428 and 1453); (LD: 40 CFR 144–148); and (LD: 40 CFR 149).

e. Wastewater and stormwater.

(1) *Policy.*

(a) Comply with facilities policy concerning use of wastewater collection/treatment systems that are owned and operated by public or private entities when economically feasible and when security is not compromised.

(b) Comply with all requirements, substantive and procedural, for control and abatement of water pollution, as outlined in the CWA that require Army compliance.

(c) Control or eliminate sources of pollutants and contaminants to protect water bodies and groundwater.

(d) Employ abatement measures for non-point source runoff from construction, facility operations, and land management activities.

(e) Encourage reuse or recycling of wastewater, sewage sludge, wash rack sediment, greases or oils, and other wastes whenever economically feasible and environmentally beneficial.

(2) *Legal and other requirements.* Applicable laws are Chapter 26, Title 33, United States Code (33 USC Chapter 26, as amended; Section 108 of Section 6961, Title 42, United States Code (42 USC 6961); Section 1401, et seq., Title 33, United States Code (33 USC 1401); Section 2701, Title 33, United States Code (33 USC 2701); and State and local laws; and for overseas installations, the country-specific FGS requirements.

(3) *Major program goals.* The Army's wastewater and stormwater management goals are to reduce the pollutant loadings in point source and non-point source discharges and to ensure efficient water reuse.

(4) *Program requirements.*

(a) Obtain and comply with NPDES and/or State discharge permits, to include all required plans. (LD: 40 CFR 122)

(b) Ensure that discharges from industrial activities to Federally-owned Treatment Works (FOTWs) and Publicly-owned Treatment Works (POTWs) comply with the substantive pretreatment requirements applicable to POTWs under the CWA. (LD: 40 CFR 403)

(c) Develop pretreatment programs as required to ensure FOTWs meet NPDES permit requirements and to improve opportunities for reuse of wastewater effluent and sewage sludge. (LD: 40 CFR 403)

(d) Develop and implement a stormwater management plan for a regulated Municipal Separate Stormwater Sewer System (MS4) as required in accordance with the installation's general permit. (LD: 40 CFR 122.26)

(e) Develop and implement a Stormwater Pollution Prevention Plan(s) (SWPPP) as required, in accordance with the installation's industrial, construction, or Municipal Separate Storm Sewer (MS4) storm water permit(s). (LD: 40 CFR 122.26)

(f) Develop and implement a spill prevention, control, and countermeasures plan (SPCCP), as required. (LD: CWA Section 311(j), 40 CFR 112.3)

(g) Perform shipboard or shore-side oil/water separation before the discharge of ballast water from watercraft. Effluent limitations from watercraft are prescribed by the U.S. Coast Guard (USCG) (LD: 33 CFR 151-158) EPA; (LD: 40 CFR 110); individual states; and TB 55-1900-206-14.

(h) Coordinate proposed military activities involving the discharge of fill material into waters of the United States, including wetlands, with, and if necessary, secure a permit from the local U.S. Army Corps of Engineers (USACE) district and appropriate State agency. (LD: 33 CFR 323; 40 CFR 230)

(i) Ensure that operators of wastewater (including industrial) treatment plants and wastewater collection systems have necessary training and certification. (LD: 42 USC 300g-8)

(j) Use analytical laboratories that are certified per applicable Federal, State, local or host nation (HN) requirements, as appropriate. (LD: 40 CFR 136; 40 CFR 141.28)

(k) Follow State approved plans and local permit requirements for non-point source water pollution control where applicable. (LD: 40 CFR 123)

f. Drinking water.

(1) *Policy.*

(a) Provide drinking water to fixed facilities in accordance with the requirements of the SDWA and applicable State and local regulations. Overseas, all Army organizations and activities will comply with country-specific FGS.

(b) Comply with Army facilities policy to transfer ownership and operation of water supply treatment systems to public and private entities when economically feasible and when security is not compromised.

(2) *Legal and other requirements.* Applicable laws are the SDWA, as amended; PL 109-58 (Energy Policy Act of 2005); and State and local laws; and for overseas installations, the country-specific FGS requirements.

(3) *Major program goals.* The Army's drinking water resource management goals are to consistently provide safe, aesthetically pleasing drinking water at adequate pressures and quantities to protect the health and quality of life of people living and working on our installations, and to better manage the cost of drinking water programs.

(4) *Program requirements.*

(a) Obtain and comply with all necessary water appropriation and use permits, National Pollutant Discharge Elimination System (NPDES) permits for wastewater discharges from drinking water treatment plants, or other permits that are required for operation of drinking water treatment systems at both fixed and field facilities. (LD: 40 CFR 122; 40 CFR 141-143)

(b) Comply with the provisions of the SDWA as implemented by State and local regulations which include, but are not limited to the following: (LD: 42 USC 300g-8; 40 CFR 136; 40 CFR 141.28)

1. Primary and Secondary drinking water standards.

2. Training and operator certification requirements.

3. Lead contamination control act requirements.

4. Public notification and consumer confidence reporting requirements.

5. Water system vulnerability assessment and emergency response plan requirements.

6. Certified laboratory requirements.

(c) Provide copies of annual Consumer Confidence Reports (CCRs) to the Installation Management Command (IMCOM) and State Adjutants General (where appropriate) by the end of each fiscal year.

(d) Perform a lifecycle cost analysis whenever the upgrade or construction of a new water supply facility is considered. Guidelines for military installations to perform the cost analysis are contained in AR 420–49, section 4–1.

(e) Monitor and upgrade Army water supply, treatment, distribution, and storage systems as needed to comply with environmental requirements. Routine operation, maintenance, and repair of Army water systems will be in accordance with AR 40–5; AR 420–49; AR 700–136; TB MED 576; TB MED 577; UFC 3–230–02; TM 5–810–5; TM 5–813–1 through TM 5–813–9; and USACHPPM TG 179.

(f) After consultation with supporting legal counsel, comply with applicable additional State and local drinking water regulations not covered under the SDWA.

4–3. Land resources

Land resources are the ranges, cantonment areas, and associated natural resources (to include soils and the biota they support).

a. Policy.

(1) Comply with applicable Federal, State, and local regulations regarding land resources management and permitting where applicable. Overseas, all Army organizations and activities will comply with applicable country-specific FGS.

(2) Provide for the conservation and rehabilitation of natural resources on Army lands.

(3) Integrate training and testing range operations and support activities within the installation environmental management system (EMS).

(4) Ensure that all management plans address range operations and activities as appropriate.

(5) Quantify environmental encroachment vulnerabilities and assess the feasibility of using external buffer zones to enhance testing and training capabilities. Where warranted, work with private landowners and eligible entities through the Army Compatible Use Buffer (ACUB) process.

(6) The management and conservation of natural and cultural resources under Army control, including planning, implementation, and enforcement functions, are inherently governmental functions that will not be contracted. Components that have contractor-operated installations or facilities will ensure that contract instruments clearly address contractor and government functions as they relate to natural and cultural resources.

b. Legal and other requirements. Principal statutes, regulations, and guidance applicable to the Army Natural Resources Management Program include:

(1) 16 USC 670a and 670b.

(2) 16 USC 35.

(3) 50 CFR 401–453, implementing regulations of the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) - Fisheries.

(4) Sections 1801–1882, et seq., Title 16, United States Code (16 USC 1801–1882).

(5) 10 USC 2665.

(6) 10 USC 2667(d).

(7) Section 2671, Title 10, United States Code (10 USC 2671).

(8) Section 2684a, Title 10, United States Code (10 USC 2684a).

(9) Section 2694a, Title 10, United States Code (10 USC 2694a).

(10) Sections 1361–1407, Title 16, United States Code (16 USC 1361–1407).

(11) Sections 4701–4751, et seq., Title 16, United States Code (16 USC 4701–4751).

(12) Sections 661–667d, United States Code (16 USC 661–667d).

(13) Section 701, Title 16, United States Code (16 USC 701).

(14) Sections 703–712, Title 16, United States Code (16 USC 703–712).

(15) Sections 3371–3378, Title 16, United States Code (16 USC 3371–3378).

(16) Part 13, Title 50, Code of Federal Regulations (50 CFR 13).

(17) Part 21, Title 50, Code of Federal Regulations (50 CFR 21).

(18) Part 190, Title 32, Code of Federal Regulations (32 CFR 190).

(19) Parts 10–16, Title 50, Code of Federal Regulations (50 CFR 10–16).

(20) EO 13186.

(21) EO 13112.

(22) EO 13423.

(23) EO 11990.

(24) PL 108–136, sections 312, 319.

(25) DODD 4715.1E.

(26) DODI 4715.3.

(27) DODI 4715.5.

(28) Memorandum, Deputy Under Secretary of Defense for Installations and Environment (DUSD (I&E)), 10 October 2002, subject: Implementation of Sikes Act Improvement Act: Updated Guidance.

(29) Applicable FGS and any legally binding international agreements.

c. Major program goals. The Army's land resources management goals are to:

(1) Integrate natural resources stewardship and compliance responsibilities with operational requirements to help achieve sustainable ranges, training areas, and other land assets.

(2) Develop, initiate, and maintain programs for the conservation, utilization, and rehabilitation of natural resources on Army lands.

d. Program requirements.

(1) *Integrated natural resources management.*

(a) Develop and implement an integrated natural resources management plan (INRMP) in accordance with 16 USC 670a in cooperation with the USFWS and the State fish and wildlife agency unless significant natural resources are absent. OCONUS installations will develop and implement an INRMP in consonance with FGS requirements. Significant natural resources are present if one or more of the following criteria apply: (LD: 16 USC 670a).

1. Federally listed, proposed, or candidate species are onsite, or critical habitat has been designated or proposed on the installation, and on-installation conservation measures are necessary to conserve the federally listed species.

2. Conservation reimbursable forestry or agricultural outleasing activities consist of 100 acres or more.

3. Hunting and/or fishing takes place for which special State permits are issued by the installation in accordance with 16 USC 670a(b)(3).

4. The installation conducts intensive, on-the-ground military missions that require conservation measures to minimize impacts (for example, soil erosion control, prescribed fire) and sustain natural resources. Installations designated by the DCS, G-3/5/7 for management under the ITAM program meet this criterion.

5. Unique biological resources, wetlands, species at risk, or ecological issues require a level of planned management that can only be addressed by an INRMP.

6. In some cases, it may be difficult to determine whether an installation has significant natural resources. In these cases the ACSIM is delegated the authority to determine whether significant natural resources are present, and, therefore, whether an INRMP is required.

(b) Implement the INRMP by:

1. Actively requesting, receiving, and using funds for priority projects and activities.

2. Ensuring that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.

3. Coordinating annually with all cooperating offices.

4. Documenting specific INRMP action accomplishments undertaken each year.

(c) Prepare INRMPs that include components addressing specific natural resources (for example, endangered species, forests, flora, fauna, soil, wetlands) and their interdependency.

(d) Review the INRMP with regard to operation and effect by the parties thereto on a regular basis, but not less often than every 5 years. Update the INRMP as appropriate in concert with installation needs to obtain mutual agreement in coordination with the USFWS, State fish and game agency(ies), and other internal and external stakeholders. A 5-year update is not required if circumstances have not changed. (LD: 16 USC 670a).

(e) Use the INRMP, range complex master plan, and ITAM 5-year plan as the garrison commander's (GC) tools for planning and integrating land resources compliance and management activities with the military mission.

(f) Provide access to training and testing ranges through sustainment of installation land resources and in compliance with natural resources laws, regulations, EOs, and Army policies.

(g) To the extent appropriate and applicable, provide for no net loss in the capability of the installation lands to support the military mission. Identify and address threats to mission land use and give high priority to management objectives that protect mission capabilities of installation lands. (LD: 16 USC 670a).

(h) Designate and ensure that the installation has ready access to a qualified military, Department of the Army (DA) civilian, or State Army National Guard (ARNG) staff member (or ARNG contractor) to serve as installation natural resources coordinator.

(i) Assure NEPA requirements are satisfied when preparing the INRMP. (LD: 50 CFR 402.06; 42 USC 4331).

(j) Conduct appropriate internal and external coordination prior to GC approval of INRMPs and revisions (for example, with Director of Plans, Training, Mobilization, and Security (DPTMS); Staff Judge Advocate; Morale, Welfare, and Recreation; Provost Marshall, and so forth). INRMPs will meet the following conditions (note that 2-5 do not apply to overseas installations):

1. Concurrence from the installation's next higher headquarters, and coordination with affected Army Commands (ACOMs), Army Service Component Commands (ASCCs), Direct Reporting Units (DRUs), NGB-ARNG, and tenants.

2. Agreement from the Regional Directors of the USFWS concerning aspects within the scope of their authority. (LD: 16 USC 670a(a)(2)).
3. Coordination with NOAA–Fisheries in those instances where INRMPs include TES or critical habitat within the scope of their authority.
4. Concurrence from land management agencies exercising jurisdiction over installation property.
5. Agreement from the Director of the State fish and wildlife agency concerning aspects within the scope of their authority. (LD: 16 USC 670a(a)(2)).
6. Opportunity for public comment provided (minimum of 30 days). (LD: Section 2905, PL 105–85).
- (k) Coordinate the draft INRMP with the Office of the Director of Environmental Programs (ODEP) when requested.
- (l) Integrate the INRMP with the installation master plan, range plans, training plans, integrated cultural resources management plans (ICRMPs), integrated pest management plans (IPMPs), cleanup installation action plans (IAPs), and other appropriate plans to ensure consistency.
- (m) For installations that have training or testing missions, ensure the DPTMS (or Range Control staff or equivalent) provides a description of optimum mission landscape requirements (current and future (next 5 years)) to include recommendations for improving the capability, availability and accessibility of land.
- (n) Establish specific goals and measurable objectives for all components of the INRMP. (LD: 16 USC 670a(b)) Establish metrics and measure progress towards achieving the objectives.
- (o) Prioritize projects and required resources necessary to achieve the objectives of the INRMP and its components.
- (p) Make unclassified portions of INRMPs available to the public through electronic format (for example, world wide web, compact disk, and so forth.). All INRMPs will undergo DPTMS security review prior to being made available. This requirement does not apply to overseas installations.
- (q) Accurately report INRMP data using the metrics in the Army Environmental Data Base - Environmental Quality (AEDB–EQ) Report and the Reimbursable Programs Tracking System (RPTS).
- (r) Conduct Planning Level Surveys (PLSs) and data analysis as the foundation for effective planning and decision-making. PLSs, with the exception of flora, will be maintained electronically as geospatial data, and will be submitted to the GIS Repository as they are updated. Existing Army scopes of work will be used when available. PLSs should be kept current according to an installation's specific needs, but at a minimum, will be reviewed and updated if necessary prior to the INRMP's revision. PLSs include as a minimum:
 1. *Topography*. A map with elevation, elevation contours, and associated data consistent with U.S. Geological Survey (USGS) standards and topographic map products.
 2. *Wetlands*. A description and map of the distribution and extent of wetlands consistent with the statement of work as defined in the Army/USFWS Memorandum of Agreement (MOA).
 3. *Surface waters*. A survey that describes and maps the distribution and extent of surface waters, and is consistent with USGS standards.
 4. *Soils*. A survey that classifies, categorizes, describes, and maps soils by map unit, and meets current National Cooperative Soil Survey standards and procedures.
 5. *Flora*. An installation-wide vascular plant survey that produces a list of plant species with verified nomenclature, classification and annotation compatible with the Natural Resources Conservation Service's (NRCS) Plant List of Accepted Nomenclature, Taxonomy, and Symbols (PLANTS).
 6. *Vegetation communities*. A survey, including field data, which describes and maps the distribution and extent of dominant and co-dominant plant communities (alliances).
 7. *Threatened and endangered (T&E) species*. A survey that maps and shows the occurrence, habitat distribution, and habitat management areas of Federally endangered, threatened, proposed, candidate, and species at risk occurring on the installation.
 8. *Fauna*. A survey, including field data, that describes and maps the distribution and extent of animals.
- (s) Ensure that turbidity and sediment levels do not irreparably degrade aquatic biota and habitat from an ecosystem perspective, or significantly impact shallow ground water aquifers.
- (t) Evaluate the feasibility and potential impacts of operating motorized off-road vehicles (ORVs) and non-motorized vehicles (for example, mountain bikes) on the military mission and natural and cultural resource management. If determined feasible, develop procedures for operating motorized ORVs and non-motorized vehicles that will protect resource values; preserve public health, safety, and welfare; and minimize use conflicts. (LD: EO 11644).
- (u) Obtain ACSIM approval prior to setting aside areas for an exclusive use that might constrain future land use decisions. Obtain supporting ACOM, ASCC, DRU, or NGB–ARNG concurrence before submitting request to ACSIM.
 - (2) *Leases, easements, and other special land uses*.
 - (a) Address leases, easements, and other special land uses within the INRMP.
 - (b) Ensure all conditions of leases and easements are consistent with the military mission and natural resources conservation and protection.
 - (c) Follow the policies set forth in AR 405–80 regarding rights-of-way or easements.

(3) *Soil resources.*

(a) Use the INRMP for the planned management of soil resources across the entire installation. The Soil Erosion and Sediment Control Component (SESCC) to the INRMP will address the following soils policy.

(b) Keep soil erosion from water within tolerance limits as defined in soil surveys prepared by the U.S. Department of Agriculture (USDA), NRCS or as required by FGS or host nation authorities.

(c) Keep soil sediment, as a pollutant, in wetlands and waterways within compliance limits.

(d) Minimize the impact of land uses on soil erosion and sedimentation when and where possible, to include:

1. Locating physically intensive land disturbing activities on the least erodible soils.

2. Using climatic/seasonal changes in soil erosion as a factor in scheduling intensive mission operations and real property management activities.

3. Identifying and rehabilitating land disturbed by operations and real property management activities.

(4) *Flora and fauna.*

(a) Promote biodiversity and ecosystem sustainability on Army lands and waters consistent with the mission and INRMP objectives.

(b) Manage flora and fauna consistent with accepted scientific principles and in accordance with applicable laws and regulations, and, where lands and waters are suitable, for conservation of indigenous flora and fauna.

(c) Manage habitat to conserve and enhance existing flora and fauna consistent with the Army goal to conserve, protect, and sustain biological diversity while supporting the accomplishment of the military mission.

(d) Introduce or reintroduce any species only upon approval of the USFWS, the State, higher headquarters, and HQDA and include in the installation INRMP. In those instances where the training mission may be impacted, coordinate with the supporting ACOM, ASCC, DRU, or NGB-ARNG and secure joint approval from the OACSIM and the Office of the DCS, G-3/5/7, DAMO-TRS. (LD: EO 11987)

(e) Consult with NOAA-Fisheries on actions authorized, funded, or undertaken that may adversely impact fisheries or marine mammals. (LD: 16 USC 1801).

(5) *Threatened and endangered (T&E) species.*

(a) Prepare and implement an Endangered Species Management Component (ESMC) to the INRMP consistent with current policy and guidance.

(b) Carry out mission requirements in compliance with 16 USC 35.

(c) Integrate endangered species management and installation planning functions to ensure compliance with 16 USC 35. (LD: 50 CFR 402)

(d) In accordance with ACSIM guidance, take appropriate actions to preclude critical habitat designation.

(e) Assess all activities (to include Military Construction (MILCON)) at the earliest opportunity to determine whether they may affect listed species or critical habitat.

(f) Coordinate T&E actions or issues with ACOM, ASCC, and DRU commanders and other tenants that may be affected by them.

(g) Conduct biological assessments for activities that may have an effect on listed species or critical habitat where they are present or may be present in the action area. (LD: 50 CFR 402).

(h) Informally consult with the USFWS or NOAA-Fisheries, document the results in writing, and if necessary, conduct a biological assessment or biological evaluation (see glossary) to assess whether an action may affect a listed species or critical habitat. If the action is likely to adversely affect the listed species or its habitat, formal consultation is required. (LD: 50 CFR 402).

(i) Coordinate with affected installation organizations and the higher headquarters prior to initiating formal consultation. HQDA may identify proposed formal consultations that require higher level review. Installations will provide the proposal and supporting documentation as requested. ODEP, in coordination with JALS-EL, will review proposals and provide comments.

(j) Formally consult with the USFWS or NOAA-Fisheries when it is determined an action "may affect" a listed species or critical habitat. If the action is not likely to adversely affect the listed species or its habitat, and the USFWS or NOAA-Fisheries concur in writing, formal consultation is not required. (LD: 50 CFR 402).

(k) Confer with the USFWS or NOAA-Fisheries on any action that is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. (LD: 50 CFR 402.10).

(l) Review all ongoing and proposed actions immediately upon listing of a threatened or endangered species or designation of critical habitat to determine if formal consultation is necessary (even if a conference has previously occurred). (LD: 50 CFR 402).

(m) Complete a Biological Evaluation before initiating formal conference on actions affecting a proposed species or proposed critical habitat. (LD: 50 CFR 402.10).

(n) Develop and implement strategies to promote, in cooperation with other landowners, the use of conservation banking and/or ACUB initiatives to minimize impacts of an action on T&E species and/or critical habitat.

- (o) Within 24 hours report 16 USC Chapter 35 (ESA) violations, by telephone or electronic means, through the chain of command to HQDA (ODEP and JALS-EL). Submit a followup written report within 7 days.
- (p) Coordinate with higher headquarters and HQDA (ODEP and JALS-EL) in taking final action to correct any endangered species management problems contributing to the 16 USC 35 (ESA) violation(s).
- (q) Ensure that T&E awareness is included in unit training for personnel who may come in contact with listed species and/or their habitats or critical habitat. Coordinate training with the installation engineer, environmental directorate, and ITAM sustainable range component.
- (r) Obtain HQDA approval before supporting USFWS's or NOAA-Fisheries' introduction and/or reintroduction of Federal and State listed, proposed, and candidate species on Army lands.
- (s) Protect the water rights necessary for the survival and recovery of listed, proposed, or candidate aquatic or riparian species. Coordinate all water rights issues with appropriate legal counsel.
- (t) Participate in the listing/delisting process, recovery plan development, and critical habitat designation where the species in question may impact installation military missions.
- (u) Cooperate with State and local authorities in the management of ACSIM-designated Army species at risk and habitats with the goal of avoiding listings that could adversely affect military readiness.
- (v) Participate in regional/habitat-wide efforts to conserve candidate and ACSIM-designated Army species at risk and habitats when it has the potential to benefit the Army.
- (w) Include State-listed species in the installation INRMP.
- (6) *Species at risk.*
 - (a) In accordance with ACSIM guidance, manage species at risk and habitats to prevent listing that could affect military readiness.
 - (b) Program and plan for environmental conservation critical funding for designated Army species at risk and coordinate Real Property Services funding opportunities for other species at risk.
 - (c) Incorporate species at risk management in the INRMP.
 - (d) Implement management plans for species at risk to include, but not limited to, survey, monitoring, habitat enhancement, and protection.
- (7) *Forest management.* Practice responsible stewardship of forested lands to support the mission.
- (8) *Conservation reimbursable agricultural/grazing outleasing and forestry programs.*
 - (a) Conduct programs that are compatible with mission operations and that support conservation compliance, sustainability, and natural resources stewardship.
 - (b) Routinely examine Army land to determine what areas, if any, are available for outleasing and/or forest management. (PD: AR 405-80 and AR 405-90)
 - (c) Coordinate with DPTMS to establish needed doctrinal terrain and ground cover requirements.
 - (d) Maintain Conservation Reimbursable Programs where these provide a direct benefit to the mission and environmental goals.
 - (e) Deposit all revenues from agriculture and grazing outleases, forest product sales, or sale of equipment procured with Conservation Reimbursable funds into the Army Forestry Account or the Army Agricultural/Grazing Account per DFAS-IN Manual 37-100-**.
 - (f) Sell no forest products nor outlease land for agricultural or grazing purposes unless the effects of the sale or lease are compatible with the INRMP. (LD: 16 USC 670a)
 - (g) Ensure that equipment procured with Conservation Automatic Reimbursable Authority is not transferred to tables of distributions and allowances (TDAs) outside of the programs or Federal Government ownership. Salvage value for equipment procured with Conservation Automatic Reimbursable Authority (Forestry or Agricultural/Grazing Outlease) will be deposited into the Army timber or agricultural/grazing outlease proceeds accounts.
 - (h) Ensure that outleases do not grant offsets that exceed the total amount of outlease value. At a minimum, revenues must cover the costs of administering the installation lease. (LD: 10 USC 2667).
 - (i) Continue Conservation Reimbursable Programs on excess or base realignment and closure (BRAC) lands until title is no longer held by the Army. Clear-cuts on excess or BRAC lands are prohibited unless approved by ODEP.
 - (j) Use revenues generated from the reimbursable programs to maintain, improve, or rehabilitate previously degraded ecosystems on the installation.
 - 1. Use revenues from agricultural/grazing outleases only for reimbursement of administrative costs of outleasing and other expenses incurred in support of multiple-land use management of natural resources.
 - 2. Use revenues from forest product sales only for management of forests and natural resources that support forest stewardship on land affected by conservation reimbursable forestry programs.
 - 3. Do not use automatic reimbursable authority to augment general operating expenses of the installation as overhead.
 - (k) Prepare determinations of availability (agricultural/grazing) and reports of availability (ROA) (forestry) as required by AR 405-80 and 405-90.
 - (l) Enter annual requirements into the Reimbursable Program Tracking System (RPTS).

- (m) Assure that agricultural and forest products are not given away, abandoned, carelessly destroyed, used to offset contract costs or traded for services, supplies, or products or otherwise improperly removed.
- (n) Assess lands to assure they are safe for nonmilitary purposes before outleasing. Document the environmental condition in a finding of suitability to lease (FOSL), Environmental Condition of Property (ECP) Report. (LD: 42 USC 4321).
- (o) When disposing of forest products from Army land by any means other than a commercial sale, the fair market dollar value will be used. This amount will be deposited in the Army Forestry Account by the proponent. Forest products may be used to directly assist the military mission without payment.
- (p) Account for all forest products and complete all commercial harvests before starting any construction that may impact forest resources.
- (q) Ensure all Army solicitations and contracts for timber sales affected by Sections 620–620j, Title 16, United States Code (16 USC 620–620j) contain a provision restricting the export of unprocessed timber procured on Army land.
- (9) *Hunting, Fishing, and Trapping.*
 - (a) Support the Provost Marshal in enforcement of State and Federal laws pertaining to hunting, fishing, and trapping.
 - (b) Coordinate with morale, welfare, and recreation (MWR) for the management and collection of fees for hunting, fishing and trapping. Do not expend environmental appropriated funds for non-appropriated fund (NAF) administration of hunting, fishing, and trapping activities.
 - (c) Deposit collected fees from the sale of Special State Licenses into the Army Fish and Wildlife Conservation Fund (21X5095). GCs are authorized to provide no-cost Special State Licenses for junior enlisted soldiers (pay grade E4 and below) and to institute a sliding fee schedule for enlisted soldiers based on ability to pay.
 - (d) Provide for controlled recreational access where feasible at Army installations containing land and water areas suitable for recreational use. (LD: 16 USC 670a).
 - (e) Provide access to uniformed personnel, family members, and the public to hunting, fishing, and trapping, consistent with security requirements and safety concerns. Membership in an organization, including rod and gun clubs, has no bearing on receiving access. Exceptions to the above include specific access rights protected by treaties with or retained by American Indian and Alaska Native Tribes (see also para 6–4).
 - (f) Provide access to disabled veterans, military dependents with disabilities, and other persons with disabilities when public access is available and when topographic, vegetative, and water resources allow access for such persons without substantial modification to the natural environment. Coordinate actions and solutions with appropriate organizations within the Army, OSD, and the Access Board as appropriate.
 - (g) Hunting, fishing, and trapping plans will be included in the INRMP for installations that have such programs.
- (10) *Noxious weeds and invasive species management.* The Director of Public Works is the proponent for noxious weeds and invasive species management.
 - (a) Prepare and implement an invasive species management component (ISMC) of the INRMP consistent with specific Federal or State initiatives. (LD: EO 13112).
 - (b) Where applicable, synchronize invasive species management practices with objectives of the installation ITAM program.
 - (c) Conduct mission activities in a manner that precludes the introduction or spread of invasive species. (LD: EO 13112).
 - (d) Do not use invasive species in installation landscaping or land rehabilitation and management projects. (LD: EO 13112).
 - (e) Use the most effective and environmentally sound approach for controlling invasive species, to include the use (or reduction in use) of pesticides. (PD: DODI 4150.7).
 - (f) Assure that installation INRMP and pest management plan are in concert regarding noxious weeds management. (PD: DODI 4150.7).
- (11) *Migratory birds.*
 - (a) Consistent with HQDA endorsement, implement conservation measures identified in the memorandum of understanding (MOU) between DOD and the USFWS pursuant to EO 13186.
 - (b) Obtain appropriate authorization (that is, take permit) from the USFWS before intentionally and directly taking any migratory bird species. Record any birds purposefully and intentionally taken under the authorization and provide an annual report to the USFWS. (LD: 16 USC 703–712).
 - (c) Establish procedures to avoid the unintentional take of migratory birds, including nests and eggs. (LD: 16 USC 703–712).
- (12) *Wildland fire management.*
 - (a) Reduce wildfire potential using appropriate management practices such as prescribed burning, firebreak maintenance/construction, etc.
 - (b) Installations with unimproved grounds that present a wildfire hazard and/or installations that utilize prescribed

burns as a land management tool will develop and implement an integrated wildland fire management plan (IWFMP) that is compliant and integral with the INRMP, the installations' existing fire and emergency services program plan(s), and the ICRMP.

(c) Assure that all civilian, contractor, and emergency services personnel involved in wildland fire management possess the level of training and physical fitness needed for their expected level of involvement.

(d) Ensure that only qualified personnel conduct prescribed burns.

Chapter 5

Pest Management

5-1. Policy

a. Protect real property and the health of soldiers, civilians, and family members from pests through use of integrated pest management (IPM) strategies.

b. Reduce the use of chemical pesticides.

c. Reduce environmental risks from pesticides through proper storage, handling, application, and disposal of pesticides.

5-2. Legal and other requirements

Listed below are statutes, laws, regulations applicable to the Army Pest Management Program.

a. Section 136, Title 7, United States Code (7 USC 136).

b. DODI 4150.7.

c. DOD 4150.7-M.

d. DOD 4150.7-P.

e. DODI 4715.5.

f. AR 40-5

g. AR 420-10.

h. AR 385-10.

i. AR 210-50.

j. For overseas installations, the country-specific FGS requirements.

5-3. Major program goals

a. Monitor and control pests that pose a threat to the health and safety of the installation population.

b. Maintain current pest management plans at all installations.

c. Minimize the use of pesticides through appropriate surveillance methods and programs.

d. Ensure that all pesticide applicators are appropriately trained and certified.

e. Develop and enforce measures to properly store and safeguard pesticides and pesticide application equipment for installation pesticide security.

f. Ensure all pesticide waste is properly disposed.

5-4. Program requirements

a. Prepare an integrated pest management plan (IPMP) that defines pest management requirements, responsibilities, and resources needed to correct pest problems at each installation. Coordinate the IPMP with all affected parties. (PD: DODI 4150.7)

b. Conduct IPM programs in accordance with plans approved by garrison commander (GC), National Guard Bureau - Army National Guard (NGB-ARNG), Installation Management Command (IMCOM)-Korea, or IMCOM-Europe, as appropriate.

c. Establish procedures to store, secure, handle, apply, dispose, and manage pesticides that are consistent with Army safety and security requirements (PD: DODI 4150.7)

d. Conduct periodic program reviews at the installation using pest management professionals to ensure regulatory compliance and correct any deficiencies (PD: DODI 4150.7)

e. Ensure Army military and civilian personnel who apply or supervise application of pesticides on Army facilities or installations or during military contingencies, will be trained and certified in accordance with DOD certification standards. Non-DOD personnel (including State employees and contractors) who apply or supervise application of pesticides on Army facilities or installations will be trained and certified by the State where the Army facility or installation is located. Quality assurance evaluators that develop or review pest management contract specifications, or assess performance of those contracts will be trained in accordance with DOD policy and guidance. (PD: DODI 4150.7)

f. Maintain and archive records and reports on all pesticide applications and operations made to all facilities and grounds to include those performed under contract by tenant and supported activities, by lessees per formal agreements, those installations and facilities in the base realignment and closure (BRAC) cleanup program, and for closing overseas installations. (PD: DODI 4150.7)

g. Ensure installation self-help programs are cost-effective and promote IPM approaches for control of minor nuisance pests through use of authorized pest management materiel, equipment, awareness training, and record keeping requirements. (PD: DODI 4150.7)

h. Ensure requirements for aerial pesticide applications over Army lands to control pests of medical, economic, or other emergencies or urgencies of military significance are addressed in an aerial spray statement of need (ASSON) and submitted to the U.S. Army Environmental Command (USAEC), NGB-ARNG, IMCOM-Korea, or IMCOM-Europe as appropriate. (PD: DODI 4150.7)

i. Ensure pest management commercial solicitations incorporate Army requirements for the application and safe handling of pesticides and are forwarded to USAEC, NGB-ARNG, IMCOM-Korea or IMCOM-Europe as appropriate for technical review prior to solicitation. (PD: DODI 4150.7; DOD 4150.7-M; DOD 4150.7-P)

j. Appoint an installation pest management coordinator (IPMC). (PD: DODI 4150.7)

Chapter 6

Cultural Resources

6-1. Policy

Ensure that installations make informed decisions regarding the cultural resources under their control in compliance with public laws, in support of the military mission, and consistent with sound principles of cultural resources management.

6-2. Legal and other requirements

Statutes, laws, regulations, and other guidance applicable to the Army Cultural Resources Management Program include:

- a.* Section 470, Title 16, United States Code (16 USC 470).
- b.* Section 1996, Title 42, United States Code (42 USC 1996) and Executive Order (EO) 13007.
- c.* Section 3001, Title 25, United States Code (25 USC 3001).
- d.* Section 470aa-470mm, Title 16, United States Code (16 USC 470); Sections 431-433, Title 16, United States Code (16 USC 431-433); and Section 469, Title 16, United States Code (16 USC 469).
- e.* Part 79, Title 36, Code of Federal Regulations (36 CFR 79).
- f.* Part 800, Title 36, Code of Federal Regulations (36 CFR 800).
- g.* Part 229, Title 32, Code of Federal Regulations (32 CFR 229).
- h.* Part 10, Title 43, Code of Federal Regulations (43 CFR 10).
- i.* DOD American Indian and Alaska Native Policy Memorandum, 20 October 1998.
- j.* Presidential Memorandum for Heads of Executive Departments and Agencies, Government-to-Government Relations with Native American Tribal Governments, 29 April 1994.
- k.* EO 13175.
- l.* EO 13287.
- m.* For overseas installations, the country-specific FGS requirements.

6-3. Major program goal

Develop and implement procedures to protect against encumbrances to mission by ensuring that Army installations effectively manage cultural resources.

6-4. Program requirements

- a. General program management.*
 - (1) Develop integrated cultural resources management plans (ICRMPs) for use as a planning tool.
 - (2) Develop NHPA programmatic agreements (PAs) and memorandums of agreement (MOAs), Army alternate procedures (AAP) historic property component (HPC) plans, NAGPRA Comprehensive Agreements (CAs) and Plans of Action (POA), Cooperative Agreements, and other compliance documents as needed.
 - (3) Appoint a government (that is, Federal or State Army National Guard (ARNG)) employee as the installation cultural resources manager (CRM).
 - (4) Establish a government-to-government relationship with Federally recognized Indian Tribes, as needed. Initial formal government-to-government consultation with Federally recognized Indian Tribes will occur only between the

garrison commander (GC) or the Adjutant General (TAG) of an ARNG and the heads of tribal governments. Follow-on activities may be accomplished by staff.

(5) Establish a process that effects early coordination between the CRM and all staff elements, tenants, proponents of projects and actions, and other affected stakeholders to allow for proper identification, planning, and programming for cultural resource requirements.

b. National Historic Preservation Act compliance.

(1) Ensure that the GC functions as the agency official with responsibility for installation compliance with the National Historic Preservation Act (NHPA).

(2) Establish a historic preservation program, to include the identification, evaluation, and treatment of historic properties in consultation with the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officer (SHPO), local governments, Federally recognized Indian Tribes, Native Hawaiian organizations, and the public as appropriate. Document historic properties that will be substantially altered or destroyed as a result of Army actions. (LD: Section 110, NHPA; 36 CFR 800)

(3) Identify, evaluate, take into account, and treat the effects of all undertakings on historic properties. If an Army undertaking may affect properties of traditional religious or cultural significance to a Federally-recognized Indian Tribe, initiate consultation on a government-to-government basis. (LD: Section 106, NHPA; 36 CFR 800)

(4) Prepare and implement, as required, an NHPA Section 106 MOA, PA, or HPC, to address NHPA compliance for undertakings. Coordinate all NHPA compliance documents (for example, MOAs, PAs, HPCs) through the chain of command to obtain HQDA technical and legal review prior to execution. (LD: 36 CFR 800)

(5) Ensure that efforts to identify, evaluate, and treat historic properties consider the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, and are conducted under the supervision of personnel who meet applicable professional qualifications for undertaking such work. (LD: 36 CFR 61; Section 112, NHPA)

(6) Maintain an up-to-date listing of all historic properties, and where applicable, maintain historic status in conjunction with real property inventory and reporting guidelines. (LD: EO 13287)

(7) Withhold from public disclosure information about the location, character, or ownership of a historic property when the GC determines that disclosure may cause risk of harm to the historic property or may impede the use of a traditional religious site by practitioners. (LD: Section 304, NHPA)

(8) Consider alternatives for historic properties, including adaptive reuse, that are not needed for current or projected installation mission requirements. (LD: Section 111, NHPA)

(9) Nominate to the National Register of Historic Places (NRHP) only those properties that the Army plans to transfer out of Federal management through privatization efforts. Nominate other properties only when justified by exceptional circumstances. Avoid adversely affecting properties that are 50-years old or older that have not been evaluated for eligibility against NHPA criteria. Treat (assume) that all historic sites are eligible (that is, off-limits) until the SHPO concurs with the federal finding of non-eligible.

(10) Where disagreement occurs with the SHPO regarding the eligibility of a historic property for the NRHP, where applicable obtain a "Determination of Eligibility" from the Keeper of the National Register, National Park Service (NPS). (LD 36 CFR 800, 36 CFR 63)

(11) Undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected as a result of Army actions. (LD: 36 CFR 800)

c. AIRFA, Executive Order 13007 and Executive Order 13175 compliance.

(1) Consult with Federally recognized Indian Tribes to provide access to sacred sites on Army installations. Consistent with appropriate health, safety mission constraints provide access to allow the practice of traditional religions, rights and ceremonies. The GC will maintain the appropriate confidentiality of sacred site locations. The GC may impose reasonable restrictions and conditions on access to sacred sites on Army installations for the protection of health and safety, or for reasons of national security. (LD: EO 13007)

(2) Avoid adversely affecting the physical integrity of sacred sites. Ensure reasonable notice is provided to Federally-recognized Indian Tribes when proposed actions may adversely affect or restrict access to the ceremonial use of, or the physical integrity of, sacred sites. (LD: EO 13007)

(3) Consult with tribal governments before taking actions that affect Federally recognized Indian Tribes. Assess the impact of Army plans, projects, programs, and activities on tribal trust resources and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs and activities. (LD: EO 13175)

d. Native American Graves Protection and Repatriation Act compliance.

(1) Designate the GC as the Federal agency official with responsibility for installation compliance with Native American Graves Protection and Repatriation Act (NAGPRA). (LD: 43 CFR 10)

(2) Prepare CAs and POAs in coordination with Federally recognized Indian Tribes and Native Hawaiian organizations. Coordinate all NAGPRA CAs through the chain of command to obtain HQDA technical and legal review prior to execution. (LD: 43 CFR 10)

(3) Absent a CA, take reasonable steps to determine whether a planned activity (including MILCON) may result in the intentional excavation or inadvertent discovery of cultural items from Federally-owned or controlled Army lands. When cultural items may be encountered, the GC will implement consultation procedures and planning requirements of Section 3 and Section 5 of NAGPRA prior to issuing approval to proceed with the activity. (LD: 43 CFR 10.3 and 43 CFR 10.5)

(4) Establish initial communication with Federally recognized Indian Tribes via written correspondence between the GC and heads of tribal governments. Formally document all resulting agreements. (LD: 43 CFR 10)

(5) Inventory, summarize, and repatriate cultural items that are in existing collections under Army possession or control. Where there is a dispute as to the affiliation of cultural items, safeguard the cultural items until the dispute is resolved. (LD: 43 CFR 5, 6, 7, and 10)

e. ARPA and AHPA Compliance.

(1) Ensure the GC serves as the Federal land manager with responsibility for installation compliance with ARPA. (LD: 32 CFR 229)

(2) Ensure the GC serves as the Federal agency official with management authority over archeological collections and associated records. (LD: 36 CFR 79)

(3) Establish and include installation policy for management of, and for limitation of collection and removal of, paleontological resources in ICRMPs. Address known paleontological resources in any NEPA documentation prepared for actions that may impact or cause irreparable loss or destruction of such resources.

(4) Prohibit searching for or collection of historic properties (including archaeological resources) on Army installations except when authorized by the GC and pursuant to a permit issued under ARPA.

(5) Minimize the amount of archeological material remains permanently curated by reserving such treatment for diagnostic artifacts and other significant and environmentally sensitive material that will add important information to site interpretation.

(6) Curation of archeological materials from Army lands will occur only in 36 CFR 79-compliant repositories. Maximize use of off-installation facilities that are better able to provide for adequate long-term curatorial services.

(7) Do not disclose to the public information concerning the nature and location of any archaeological resource for which the excavation or removal requires a permit or other permission under ARPA or under any other provision of Federal law. (LD: Section 9a, ARPA 1979)

Chapter 7 Pollution Prevention

7-1. Policy

a. Pollution prevention is the Army's preferred approach, where timely and cost-effective, to achieve and maintain compliance with environmental laws and regulations.

b. Prevent pollution from all sources to the extent practicable by:

(1) Reducing pollutants at the source.

(2) Modifying manufacturing, packaging, and shipping processes, maintenance or other industrial practices.

(3) Modifying product designs.

(4) Developing and modifying acquisition systems.

(5) Recycling/reuse (to include implementing water and energy conservation measures), especially in closed-loop processes.

(6) Preventing disposal and transfer of pollution between media.

(7) Meeting affirmative procurement requirements and promoting the acquisition and use of environmentally preferable products and services.

(8) Promoting use of nontoxic substances.

c. Use pollution prevention to complement, and where practicable, replace traditional pollution control approaches.

d. Incorporate pollution prevention planning throughout the mission, operation, or product life cycle.

7-2. Legal and other requirements

a. 42 USC 6901, (RCRA).

b. PL 109-58.

c. Sections 6901-6992k, Title 42, United States Code (42 USC 6901-6992k)).

d. Sections 13101-13102, Title 42, United States Code (42 USC 13101-13102).

e. EO 13423.

f. DODI 4715.4.

g. AR 70–1.

7–3. Major program goals

- a. Reduce use of products or processes that degrade the environment.
- b. Invest in pollution prevention in all mission and support areas, as applicable.
- c. Minimize the use of toxic and hazardous materials and processes in all life cycle phases of acquisition programs, logistics support, modification of existing weapons systems, and installation management.
- d. Implement pollution prevention initiatives to reduce life cycle costs of military missions and improve demilitarization and disposal of systems.
- e. Disseminate pollution prevention opportunities and lessons learned across the Army.
- f. Incorporate a Hazardous Materials Management Program (HMMP) into logistics business practices to reduce hazardous material inventory and hazardous waste (HW) disposal.

7–4. Program requirements

- a. Periodically review operations and conduct pollution prevention opportunity assessments. Maintain an updated installation pollution prevention plan. Implement cost-effective pollution prevention opportunities identified by the assessments.
- b. Develop and implement a Green Procurement Program with emphasis on the mandatory purchasing preference programs (Affirmative Procurement for all designated Environmental Protection Agency (EPA) and DOD guidelines). (LD: EO 13423; 40 CFR 247)
- c. Address environmental concerns throughout the acquisition life cycle. (PD: AR 70–1)
- d. Emergency Planning and Community Right-to-Know Act (EPCRA).
 - (1) Army activities within the United States will comply with EPCRA. Army activities will prepare and maintain an inventory of hazardous substances present at the activity. (LD: EO 13423)
 - (2) Activities will submit EPCRA reports to Local Emergency Planning Committees (LEPC), State Emergency Response Commissions (SERC), local fire departments with jurisdiction over the activity, and EPA if they exceed reporting threshold quantities. Tier I and Tier II reports are due by 1 March in each calendar year. An activity may be a LEPC when appointed by a SERC. (LD: EO 13423)
 - (3) Activities will submit draft electronic Toxic Release Inventory (TRI) Form R reports to the U.S. Army Environmental Command (USAEC) via chain of command by 1 May of each calendar year. After review and comment from USAEC, activities will provide final report to the EPA by 1 July, with copy to USAEC. (LD: EO 13423)

Chapter 8 Munitions Use on Ranges

8–1. Policy

This chapter applies to operational ranges, which are defined as ranges that are under the jurisdiction, custody, or control of the Secretary of Defense and that are used for range activities; or, although not currently being used for range activities, that are still considered by the Secretary to be a range and have not been put to a new use that is incompatible with range activities. In managing operational ranges, all Army organizations and activities will—

- a. Consider demilitarization, constituent migration, and range cleanup and clearance in the weapons systems total lifecycle cost.
- b. Manage the Army munitions inventory to achieve and maintain compliance with the Military Munitions Rule (or applicable Final Governing Standards (FGS) overseas).
- c. Whenever practicable, recycle obsolete, excess, or unserviceable munitions and munitions residue.
- d. Incorporate environmental considerations into sustainable range designs to support mission requirements.
- e. Coordinate with the Headquarters, Department of the Army, Deputy Chief of Staff, G–3/5/7 before closing an operational range.

8–2. Legal and other requirements

- a. Section 9601, Title 42, United States Code (42 USC 9601); Section 300f, Title 42, United States Code (42 USC 300f); Section 26, Title 33, United States Code (33 USC 26); Section 7401, Title 42, United States Code (42 USC 7401); FGS requirements; and other regulations that apply to soil, water, and air.
- b. Sections 200 to 206, Part 266, Title 40, Code of Federal Regulations (40 CFR 266.200 to 40 CFR 266.206) or applicable State versions.
- c. DODD 4715.11 and DODD 4715.12.
- d. DODI 4140.62.

8-3. Major program goals

Identify and address environmental issues that impact the use of Army ranges.

8-4. Program requirements

a. Munitions management.

(1) Train munitions managers and handlers on the Munitions Rule and related State requirements (or applicable FGS requirements overseas). (PD: Munitions Action Plan)

(2) Audit for compliance with the Munitions Rule and related State requirements (or applicable FGS requirements overseas). (PD: Munitions Action Plan)

b. Environmental support to range operations.

(1) Prepare an annual Toxic Release Inventory (TRI) Form R for operational ranges as required and submit with the installation's TRI report to the U.S. Army Environmental Command (USAEC) via chain of command by 1 May of each calendar year (this does not apply overseas). After review and comment from USAEC, facilities will provide final report to the Environmental Protection Agency (EPA) by 1 July, with copy to USAEC (see para 7-4d).

(2) Respond to a release or substantial threat of release of munitions constituents (MC), munitions and explosives of concern (MEC), or unexploded ordnance (UXO) from an operational range to off-range areas, when such release poses or may pose an imminent and substantial threat to human health or the environment.

(3) Where practicable, maintain records of the historical uses of operational ranges; and retain environmental cleanup investigations, hydro-geologic, geologic, and soil surveys, and other environmental documents that support sustainable range planning.

(4) Maintain and sustain ranges in an environmentally compliant manner, and undertake emergency response action when appropriate.

c. Response to munitions and explosives of concern.

(1) Investigate and address, as appropriate, the explosives safety, human health, or environmental risks presented by MEC. (This can be as simple as a notification to the community with an education program about the hazards posed by military munitions and how to avoid them, or as complicated as a long-term response action involving sophisticated technology, specialized expertise, and significant resources.)

(2) Maintain permanent records of the coordinates of all areas known or suspected to contain MEC.

(3) Maintain permanent records of all MEC clearance operations, explosive ordnance disposal (EOD) incidents, and open burn/open detonation operations conducted on the range.

d. Chemical warfare agent wastes. Storage and disposal of chemical warfare agent waste and related agent-contaminated material may be subject to the requirements of RCRA or applicable State regulations (this does not apply overseas). Generators of chemical warfare agent waste and agent-contaminated material are responsible for ensuring proper storage and for paying disposal costs (this does not apply to Defense Environmental Restoration Program (DERP)-eligible sites).

Chapter 9 Materials Management

9-1. Hazardous materials

a. Policy.

(1) Follow approved standardized hazardous material management business practices as specified by the Deputy Chief of Staff, G-4 (DCS, G-4) and the Office of the Assistant Chief of Staff for Installation Management (OACSIM) to implement the Hazardous Material Management Program (HMMP).

(2) Review and approve hazardous material (HM) usage and track usage to using processes and work centers.

(3) Reduce the acquisition and use of hazardous materials and the generation of solid or hazardous wastes (HW) through centralized inventory control, best management practices (BMPs), pollution prevention actions, improved procurement practices, material re-use, recycling, and enhanced shelf-life management. HMs should be procured through the standard Army supply system. Use of government IMPAC credit cards to purchase HM is generally prohibited, and may only be allowed on a case-by-case basis by Garrison Commanders or their designated representative.

(4) Manage and dispose of pesticides, residues, and their containers in an environmentally safe manner.

(5) Do not allow the transport, storage, or disposal of non-DOD hazardous materials on Army installations unless approved by the Office of the Assistant Secretary of the Army for Installations and Environment (OASA (I&E)), his or her designee, or higher authority.

b. Legal and other requirements. Section 11011, Title 42, United States Code (42 USC 11011); Section 302-313, Title 33, United States Code (33 USC 26); and Executive Order (EO) 13423.

c. Major program goals. The goals of the HMMP are to reduce risk to public health and the environment by

employing management controls and pollution prevention initiatives to comply with regulations and executive orders and to support sustainability.

d. Program requirements.

(1) Follow Army logistics policy for identifying, storing, and transporting hazardous materials as specified by the DCS, G-4. Related policy guidance can be found in safety, medical, acquisition and logistics regulations. Installation supplements involving any hazardous material management should be coordinated with the installation environmental coordinator, safety coordinator, and installation medical officer.

(2) Record, review, and analyze HM and HW operational data as a source of information to measure HMMP effectiveness.

9-2. Toxic substances

a. General. As used in this regulation, toxic substances include asbestos, polychlorinated biphenyls (PCBs), and lead-based paints (LBP). Generators will pay disposal costs for toxic substances (except that the installation will pay disposal costs for toxic substances that are also classified as a RCRA-C hazardous waste).

b. Asbestos management.

(1) *Policy.* The Army proponent for asbestos hazard management is the Assistant Chief of Staff for Installation Management (ACSIM), Directorate of Facilities and Housing. Army facility policy and guidance on asbestos management is provided in AR 420-70, chapter 3. The Army's medical policy related to asbestos is found in AR 40-5.

(2) *Legal and other requirements.* Applicable legal and other requirements for asbestos management include Section 2651, Title 15, United States Code (15 USC 2651); Section 1801, Title 49, United States Code (49 USC 1801); Section 2601, Title 15, United States Code (15 USC 2601); 42 USC 7401, as amended; Section 1001, Part 1910, Title 29, Code of Federal Regulations (29 CFR 1910.1001); Section 1101, Part 1926, Title 29, Code of Federal Regulations (29 CFR 1926.1101); for overseas installations, the country-specific FGS requirements.

(3) *Major program goals.* Prevent human exposure to asbestos hazards on Army-owned property and maintain compliance with all pertinent regulations. This also applies to accommodations made available to the Army for its exclusive use overseas.

(4) Program requirements.

(a) Comply with Sections 140-156, Part 61, Title 40, Code of Federal Regulations (40 CFR 61.140-156) requirements regarding fees and notification. (LD: 40 CFR Part 61.140-156; 40 CFR 70)

(b) Ensure that all workers in facilities where asbestos exposure may occur are trained under Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) regulations and asbestos safe work practices requirements. (LD: 40 CFR 763)

(c) Ensure that all workers that perform OSHA asbestos work are trained, equipped, and supervised according to EPA abatement and respiratory protection requirements. (LD: 29 CFR 1926.1101; 40 CFR 763)

(d) Use only laboratories accredited under the National Voluntary Laboratory Accreditation Program or host nation (HN) accredited laboratories for overseas installations for the quantitative measurement of bulk and air asbestos samples. (LD: 40 CFR 763.87)

(e) Remove/abate asbestos-containing material only when it:

1. Can no longer be managed in place.
2. Will be disturbed during maintenance, repair, or construction projects.
3. Is friable or will become friable during demolition of a facility.
4. Is economically justified to be removed during building deconstruction.
5. Has been identified to be a hazard and the Army is transferring ownership of the facility to a non-federal entity.

c. Polychlorinated biphenyl management.

(1) *Policy.* Army policy is for generators of polychlorinated biphenyl (PCBs) to manage them in place unless operational, economic, or regulatory considerations justify removal. Economic analyses include potential environmental damage.

(2) *Legal and other requirements.* Requirements for PCB management are found in 15 USC 2601, and applicable State and local requirements; and for overseas installations, the country-specific FGS requirements.

(3) *Major program goals.* Prevent human exposure to PCB hazards on Army-owned property and maintain compliance with pertinent regulations.

(4) Program requirements.

(a) Ensure that the inventory, management, reporting, storage, disposal, and cleanup of PCBs comply with Federal, State, and local regulations. (LD: 40 CFR 761)

(b) Require generators, commercial storers, transporters, and disposers of PCBs to have an EPA identification number. (LD: 40 CFR 761.20, 761.60(b), 761.202 through 761.205)

(c) Train personnel who handle or may potentially be exposed to PCBs to perform PCB-related responsibilities in a safe and environmentally sound manner. (LD: 29 CFR 1910.1200; 29 CFR 1910.120(q))

(d) Prohibit the new use or introduction of PCBs at Army facilities.

d. Lead-based paint management.

(1) *Policy.* The Army proponent for lead-based paint (LBP) management is the ACSIM, Directorate of Facilities and Housing. Army facility policy and guidance on LBP management is provided in AR 420–70, chapter 3.

(2) *Legal and other requirements.* Requirements for LBP management are found in 15 USC 2601; Section 1025, Part 1910, Title 29, Code of Federal Regulations (29 CFR 1910.1025); Section 62, Part 1926, Title 29, Code of Federal Regulations (29 CFR 1926.62); Part 745, Title 40, Code of Federal Regulations (40 CFR 745); AR 420–70, chapter 3; and applicable State and local requirements; for overseas installations, the country-specific FGS requirements.

(3) *Major program goals.* Prevent human exposure to LBP hazards on Army-owned property and maintain compliance with pertinent regulations.

(4) *Program requirements.*

(a) Ensure that all workers that perform lead abatement work in child occupied facilities and target housing are trained, equipped, and supervised according to EPA lead-based paint abatement requirements and OSHA requirements for lead in construction. (LD: 40 CFR 745 and 29 CFR 1926.62, respectively). Construction work impacting lead-based paint that is not considered abatement of lead-based paint in target housing or child occupied facilities need only comply with OSHA requirements. (LD: 29 CFR 1926.62)

(b) Per facility and housing BMPs, manage LBP and lead-contaminated soil in place unless operational, economic, and/or regulatory requirements dictate its removal.

(c) Disclose known LBP hazards in Army housing. (LD: 40 CFR 745)

(d) Ensure that disposal of LBP complies with Federal, State, and local regulations.

Chapter 10 Waste Management

10–1. Hazardous waste

a. Policy.

(1) Hazardous waste disposal costs are those costs associated with the collection, treatment, storage, transportation and disposal of hazardous wastes. This includes all Defense Reutilization and Marketing Service (or other contract agent) costs directly related to the packaging and offsite shipment of the wastes. It does not include the disposal of special wastes defined as non-hazardous unless otherwise defined as hazardous by State and local regulations, or country-specific Final Governing Standards (FGS); asbestos; chemical and biological agent waste; radioactive waste; and regulated medical wastes (RMW).

(a) Garrisons must directly charge or seek reimbursement from non-Army tenants and activities funded through an operating fund (Defense Business Operating Fund and Army Working Capital Fund), a procurement fund (Procurement of Ammunition, Army), a research and development fund (Research, Development, Test, and Evaluation and Army Test and Evaluation Command activities), and other DOD funded activities (primarily Defense Logistics Agency, Medical Command, and Defense Commissary Agency). Though appropriated funds can be used for a non-appropriated fund activity (Category C), it is subject to the availability of funds of HQ, IMCOM. Special installations will pay for hazardous waste disposal. Excess or expired hazardous materials must be handled in accordance with AR 710–2 and garrison procedures.

(b) Hazardous wastes generated under service, facility, maintenance or construction contracts (construction demolition debris, paints, soil disposal, disposal of sand from ranges, sludge from wash racks, oil/water separators, water treatment plants, and so forth.) should not be a separate cost and funded as part of the original contract.

(c) The Garrison environmental office will be considered the generator, for funding purposes, of orphan wastes found on post, and wastes from a household hazardous waste collection program.

(2) Comply with all applicable Federal, State, and local HW regulations, and FGS.

(3) Effectively manage HW and reduce its generation.

(4) Minimize the need for Army-owned or operated permitted HW treatment, storage, and disposal facilities.

(5) Minimize HW generation through pollution prevention actions, for example, source reduction, material substitution, and recycling/reuse. Where cost effective and timely, implement pollution prevention solutions to reduce or eliminate compliance requirements.

(6) Prohibit the storage of HW in underground storage tanks (USTs), except where allowed by FGS.

b. Legal and other requirements. 42 USC 6901, Subtitle C; Parts 260–279, Title 40, Code of Federal Regulations (40 CFR 260–279); DOD 4500.9–R, chapter 204; Parts 171–178, Title 49, Code of Federal Regulations (49 CFR 171–178); for overseas installations, the country-specific FGS requirements.

c. Major program goals. Continually reduce the volume of HW generated by Army installations, and maintain compliance with pertinent HW regulations.

d. Program requirements.

- (1) Systematically evaluate waste streams to ensure all potential hazardous or special wastes are properly identified and characterized. (LD: 40 CFR 262.11; 40 CFR 264.13)
- (2) Ensure that all persons handling or managing HW are provided with appropriate training.
- (3) Develop and implement a hazardous waste management plan (HWMP) or other comparable document appropriate to the size and complexity of the operation. The HWMP (or other comparable document) should include, at a minimum, written procedures for all aspects of HW management, to include the identification, storage, and transporting of HW; training of personnel; tracking manifests; and maintaining required records.
- (4) Maintain appropriate records in accordance with RCRA and applicable State or FGS requirements.
- (5) Complete State/EPA or applicable FGS annual or biennial reporting requirements.
- (6) Ensure that HW manifests are only signed by those individuals who have been appropriately trained, and are authorized in writing by the garrison commander (GC). (LD: 49 CFR 172.700–704 (Subpart H); DOD 4500.9–R, chapter 204)
- (7) Ensure that the GC signs the RCRA HW permit applications for the installation, sub-installations, and supported facilities as the facility “owner.” This responsibility cannot be delegated.
 - (a) Officials in charge of tenant activities will sign the permit application as the “operator.”
 - (b) For the Defense Logistics Agency, the DRMS Commander will sign as the “operator.”
 - (c) For Army Reserve facilities, the Reserve Readiness Command (RRC) Commander will sign as the facility “owner.”
 - (d) For Army National Guard (ARNG) facilities, the Adjutant General (TAG) of the respective State or territory will sign as the facility “owner.”
 - (e) For closed, transferred, or transferring facilities, the GC of the receiving installation will sign as “owner”, and the agency maintaining control and influence over the closed or transferring facility’s HW management program will sign the permit as “operator.”
 - (f) For installations not under the purview of the IMCOM, the senior mission commander (SMC) will sign as the facility “owner.”
- (8) If non-DOD tenants require HW treatment, storage, and disposal facility permits, ensure that the contract, lease, or agreement with the non-DOD tenant holds the Army harmless and contains specific language regarding the operation of the facility, access, damages, and environmental liability in strict accordance with permit conditions. The GC will sign permit applications as the “owner,” and the tenant will sign as the “operator” of the facility.
- (9) Use the Defense Reutilization Marketing Office (DRMO) for HW disposal with the following exceptions:
 - (a) When DRMO has indicated or demonstrated the inability to provide the service, and only when a waiver has been approved in writing by the next higher echelon on a case-by-case basis. Waivers will be renewed in writing every 5 years.
 - (b) Hazardous waste generated incidental to the execution of service or construction contracts should be disposed of by the contractor performing the basic contract, at the contractor’s expense, using the installation’s generator identification number on the manifest. Such actions must be coordinated with the installation environmental coordinator and documented in writing. The GC remains the “owner” of the waste.
 - (c) Ensure that all contracts for HW disposal are reviewed by the installation environmental coordinator and the Director of Contracting, and approved by the GC. Such contracts must comply with contract standards in DOD 4160.21–M, chapter 10.

10–2. Solid waste

a. Policy. The Army proponent for solid waste management is the Assistant Chief of Staff for Installation Management (ACSIM), Directorate of Facilities and Housing. Army facility policy and guidance on solid waste management is provided in AR 420–49, chapter 3.

(1) Comply with legally applicable Federal, State, and local requirements, both substantive and procedural, for managing solid waste, including generation, collection, storage, and disposal. This includes the terms and conditions of State and Federal solid waste permits. Overseas, all Army organizations and activities will comply with country-specific FGS and any permits obtained on behalf of the installation by the host nation.

(2) Emphasize integrated solid waste management, pollution prevention, and individual participation to achieve compliance.

(3) Minimize solid waste generation and disposal, and maximize recovery, recycling, and reuse through pollution prevention actions.

(4) Integrate the management of wastes into construction and demolition (C&D) activities such that a significant amount of the materials generated can be reused in their original form with little or no processing, through systematic disassembly or deconstruction, more careful handling, segregating, and making them available to specialized markets.

(5) Ensure that waste accumulation, storage, or transfer facilities are designed and constructed to prevent releases to the environment.

b. Legal and other requirements.

(1) 42 USC 6901, Subtitle D (as amended); PL 98–616; Paragraph a, Sections 6941–6949, Title 42, United States Code (42 USC 6941–6949a, Subtitle D; as amended; Parts 239–258 and Part 261, Title 40, Code of Federal Regulations (40 CFR 239–258 and 261); applicable FGS; and EO 13423.

(2) AR 420–49, chapter 3 defines the Army’s policy for managing solid waste. This section of AR 200–1 supplements AR 420–49 by identifying environmental aspects of solid waste management.

(3) AR 415–15, appendix F, Item F–37, Army Disposal/Demolition Program, describes the Army requirement to dispose of one square foot of facilities to offset each square foot of new construction added to the real property inventory.

(4) DA Pam 40–11, chapter 4, Section 4–11 defines the Army’s policy for managing regulated medical wastes.

c. Major program goals. The environmental goals of the Army’s solid waste management program are to protect public health and the environment by increasing solid waste diversion, minimizing the generation of solid wastes, and increasing the program’s economic benefit by investing in pollution prevention initiatives and better managing costs associated with disposal and diversion.

d. Program requirements. Army installations with Army-owned landfills will operate under 42 USC 6941–6949a and meet the criteria of a municipal solid waste landfill (MSWLF) as defined by Federal regulation or State-approved program. Installations may also operate landfills specifically for construction and demolition debris, and/or non-hazardous industrial process wastes, as determined by their mission. These landfills will be operated in accordance with applicable Federal, State, and local regulations. (LD: 40 CFR 257, 258)

Chapter 11

Storage Tank Systems/Oil and Hazardous Substances Spills

11–1. Policy

Manage tank systems used to store oil and hazardous substances in an environmentally safe manner, prevent spills of these substances, and rapidly respond to spills.

11–2. Legal and other requirements

a. 42 USC 9601; 42 USC 11011; 33 USC 26, as amended to include Part 112, Title 40, Code of Federal Regulations (40 CFR 112); Part 300, Title 40, Code of Federal Regulations (40 CFR 300); 42 USC 6901, as amended to include Part 280, Title 40, Code of Federal Regulations (40 CFR 280) and Part 281, Title 40, Code of Federal Regulations (40 CFR 281); 33 USC 2701; 15 USC 2601, as amended; Public Law (PL 109–58), Sections 1521–1532; and AR 50–6. Related Federal laws and regulations are referenced in appendix A.

b. Overseas, all Army organizations and activities will comply with applicable Final Governing Standards (FGS).

11–3. Major program goal

Storage tanks used to transport, store, and handle oil and hazardous substances will be managed to protect the environment and public health.

11–4. Program requirements

a. Storage Tank Systems.

(1) Provide leak detection for regulated underground storage tanks (UST) by retrofit or inventory control procedures. (LD: 40 CFR 280.43)

(2) Provide leak detection, overfill protection, and cathodic protection for aboveground storage tanks (ASTs) as required. (LD: 40 CFR 112.8)

(3) Use double wall construction with interstitial monitoring on all new regulated USTs.

(4) Ensure that all UST systems are cathodically protected or constructed of non-metallic material to meet corrosion protection requirements. (LD: 40 CFR 280.20)

b. Oil and hazardous substance spills.

(1) Develop and implement a spill prevention, control, and countermeasures plan (SPCCP), as required. (LD: CWA Section 311(j), 40 CFR 112, and OPA)

(2) Ensure that the SPCCP addresses secondary containment (or lack thereof) at oil and hazardous material storage facilities. (LD: 40 CFR 112.7)

(3) Develop and implement a facility spill contingency plan (SCP) for each oil and hazardous material storage facility that does not have adequate spill prevention structures in place. (LD: 40 CFR 112.7)

(4) Ensure secondary containment is provided for oil and hazardous material storage facilities, including piping. If it is determined that secondary containment is impracticable, the installation must address this in the SPCCP and facility SCP (an SCP is only required if adequate spill prevention structures are not in place). (LD: 40 CFR 112.7)

(5) Ensure the SPCCP is reviewed at least once every 5 years. Amend the plan within 6 months of a change that

materially affects its potential for discharge. If technical changes have been made, the plan must be signed by an individual with authority to commit the necessary resources to respond to a release, and certified by a professional engineer familiar with installation operations. (LD: 40 CFR 112.5)

(6) Use the Environmental Quality Control Committee (EQCC) to coordinate the SPCCP with affected installation elements.

(7) Maintain an accurate inventory of SPCCP applicable containers, including the location and/or spatial extent of such containers. (LD: 40 CFR 112.7)

(8) Prepare spill response plans and notification procedures, to include a facility response plan, as needed, for spills caused by Army actions, including coordination with local emergency planning authorities. (LD: 40 CFR 300.211; 40 CFR 112.20; 33 CFR 154; 49 CFR 130; 49 CFR 171–172)

(9) Conduct training to ensure proper response to spills or releases. This includes annual spill response exercises for the spill response organization. (LD: 29 CFR 1910.120 (e), (p), (q); 40 CFR 112.21)

(10) Ensure the garrison commander (GC) designates, in writing, a qualified on-scene coordinator (OSC) responsible for executing spill response. The local commander will designate in writing the OSC at USAR maintenance facilities. The State Adjutants General will designate in writing the OSC at Army National Guard (ARNG) maintenance facilities. (LD: 40 CFR 300.120)

(11) Ensure that facility operators and OSC understand and comply with Federal and State reportable quantity requirements.

(12) When a spill occurs, immediately report the spill or release to the OSC and implement the SCP and/or SPCCP. The OSC will determine if it exceeds reportable quantities and will notify regulatory authorities as required. Any spill that requires notification of regulatory authorities will be reported to the next higher headquarters. (LD: 40 CFR 112.4; 40 CFR 300.125; 33 CFR 153, Subpart B; 40 CFR 302)

(13) Assist Federal or State agencies in response to spills outside the Army property where practicable in accordance with AR 75–15.

(14) For outside the continental United States (OCONUS) installations, provide response assistance for spills off Army property in accordance with their applicable FGS and garrison SPCCP.

(15) For further guidance in managing ASTs and equipment subject to 40 CFR 112, refer to the 2 April 2004, DOD Joint Services Spill Prevention, Control, and Countermeasure (SPCC) Guidance.

Chapter 12

Environmental Cleanup

12–1. Policy

a. Comply with applicable Federal, State, local, and Department of Defense (DOD) requirements for the cleanup of contamination on Army installations and formerly used defense sites (FUDS). Figure 12–1 depicts the differences and commonalities among the various cleanup program areas. For overseas installations, only the Compliance-related Cleanup (CC) Program applies.

b. Accomplish early and continued public involvement in the cleanup programs.

c. Keep State regulatory agencies and the U.S. Environmental Protection Agency (EPA) informed of cleanup program activities, as appropriate.

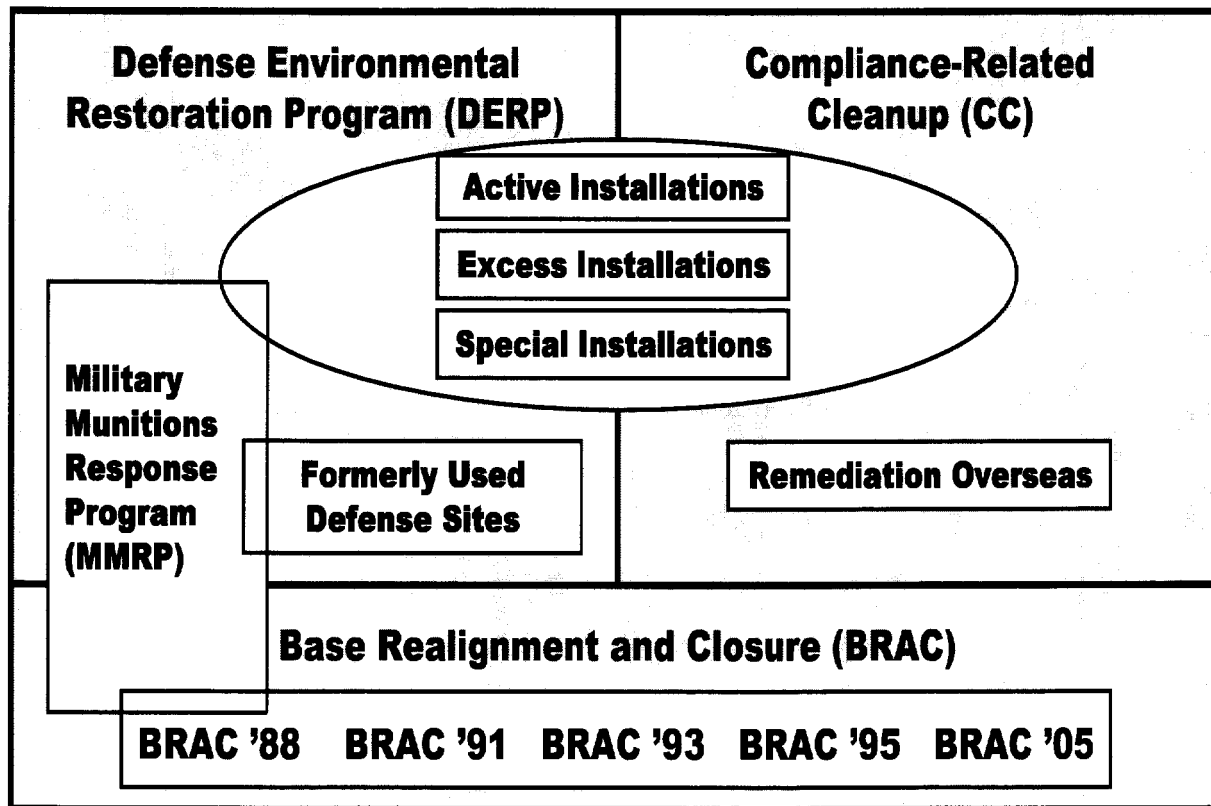


Figure 12-1. Army Environmental Cleanup Program Areas

12-2. Legal and other requirements

The following list of statutory requirements apply to environmental cleanup:

a. 42 USC 9601; 40 CFR 300; Section 120, Part 1910, Title 29, Code of Federal Regulations (29 CFR 1910.120); Executive Order (EO) 12580; and 42 USC 6901, Sections 3004u, 3004v, and 3008h; Section 2701, Title 10 United States Code (10 USC 2701); DOD 7000.14-R; DODI 4715.7, for all but overseas installations; DODI 4715.8; Engineer Regulation (ER) 200-3-1, formerly Used Defense Site (FUDS) Program Policy; Charter for the Formerly Used Defense Sites Program, 31 October 2003; and Office of the Assistant Secretary of the Army for Installations and Environment (OASA (I&E)) Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) (DASA (ESOH)) memorandum, 18 June 2004, subject: The Army Environmental Compliance-related Cleanup Program Eligibility. The Army environmental cleanup programs include the Army DERP at active, closing, and realigning installations; DERP at FUDS properties; and compliance-related cleanup (CC) at active and excess installations, including those overseas. Regulations that pertain to the Army's environmental cleanup programs are referenced in appendix A.

(1) Defense Environmental Restoration Program (DERP) cleanups (Installation Restoration Program (IRP), Military Munitions Response Program (MMRP), base realignment and closure (BRAC), FUDS) address hazardous substances, pollutants and contaminants, and military munitions sites, consistent with the provisions of 42 USC 9601, et seq. (CERCLA); 40 CFR 300 (National Oil and Hazardous Substances Pollution Contingency Plan); EO 12580; and 42 USC 6901, Sections 3004u, 3004v, and 3008h for activities that resulted in contamination prior to 17 October 1986 at non-permitted sites.

(2) Compliance related cleanup (CC) addresses cleanup requirements that are legally mandated but not eligible for funding under the Army DERP. The program focuses on the remediation of contamination at Army overseas facilities (it does not include actions to remedy contamination that are covered by environmental annexes to operations orders and similar operational directives), and on the cleanup of contamination resulting from operations that have occurred since 17 October 1986. This includes sites at Active Army, Army Reserve, Army National Guard (ARNG) Federally-owned facilities, as well as cleanup at non-Federally-owned, Federally-supported (State-owned, State-operated) ARNG

facilities. CC does not include initial response actions to address spills, but does include follow-on response action, if required.

b. The DERP is supplemented by the *DOD Management Guidance for the Defense Environmental Restoration Program (DERP)*, September 2001. The DERP Management Guidance defines eligibility and addresses sites in the following three program categories:

(1) The IRP includes response actions to address releases of hazardous substances, pollutants and contaminants (as defined in CERCLA); petroleum, oil, lubricants (POL); DOD-unique materials; hazardous wastes (HW); and low-level radioactive materials or low-level radioactive wastes (LLRW). The IRP also includes military munitions (including munitions and explosives of concern (MEC), see glossary) or munitions constituents (MC) at a relatively small number of sites where the following three conditions all exist:

(a) The release occurred prior to 30 September 2000.

(b) The release is at a site that is not an operational range, an active munitions demilitarization facility, an active waste military munitions (WMM) treatment or disposal unit, or FUDS.

(c) The site was identified or included in the Army Environmental Data Base-Restoration (AEDB-R) or Formerly Used Defense Sites Management Information System (FUDSMIS) prior to 30 September 2000, and was not classified as "response complete."

(2) The MMRP addresses munitions responses at active or BRAC installations where the release occurred prior to 30 September 2002, and the release is at a site that is not a FUDS, an operational range, an active munitions demilitarization facility, or an active WMM treatment or disposal unit that operated after 30 September 2002, and the site was not identified or included in the AEDB-R prior to 30 September 2000.

(3) Building demolition/debris removal (BD/DR) addresses the demolition and removal of unsafe buildings and structures at facilities or sites that are or were owned by, leased to, or otherwise possessed by the United States and under the jurisdiction of the DOD.

12-3. Major program goals

Perform appropriate, cost-effective cleanup so that property is safe for Army use (or transfer as appropriate), sustains operations and training, and protects human health and the environment.

12-4. Program requirements

a. *Cleanup program areas.* All cleanup program areas must:

(1) Identify cleanup requirements at the site level using the more stringent of current or projected future land use as documented in the installation master plan, develop a reasonable schedule and cost to complete cleanup, record liabilities in a database of record, and pursue cleanup until regulatory agreement with site closure.

(2) Provide site-level data in response to Assistant Chief of Staff for Installation Management (ACSIM) data calls for updates to the databases of record.

(3) Develop and maintain an administrative record for National Priorities List (NPL) sites or similar documentation for non-NPL sites on the installation or U.S. Army Corps of Engineers (USACE) District responsible for FUDS.

(4) Prepare annual cost-to-complete estimates for each site in the program that reflect the environmental strategy and sequence as presented in the installation action plan (IAP), BRAC IAP, or FUDS management action plan (MAP). Maintain an audit trail for changes that occur in a fiscal year (FY) that reflects actions taken, change in estimates, and new or deleted requirements. Estimates must be based on reliable, complete and fully documented data and will be in constant year dollars. (LD: PL 101-576)

(5) Determine contamination migration. Garrison commanders (GCs) must approve off-site data collection and any off-post monitoring to ensure that contamination has not migrated off-site. (LD: EO 12580 at CERCLA sites; PD at other sites)

(6) Notify the DASA (ESOH) through the chain-of-command prior to initiating any off-site response actions. The Army has the authority to conduct response actions outside the installation boundary, however, the lack of Army control over this off-installation property, potential legal and technical complexity, sensitivity, and the necessity for increased public involvement requires additional oversight on these responses. This notification requirement does not apply to FUDS.

(7) Maintain a permanent document repository to ensure cleanup information is available to protect future Army liability at any date in the future.

(8) Document environmental response decisions in a CERCLA record of decision (ROD) or an equivalent decision document (DD) or action memorandum prior to conducting removal or remedial actions.

(9) Coordinate remedial documents with Natural Resource Trustees.

(10) Work cooperatively with regulatory agencies to ensure that the Army's cleanup goals are accomplished cost-effectively, and in accordance with applicable laws and regulations.

(11) Fully support public involvement in cleanup programs where there is potential impact on the health, environment, and economic well being of the local community.

(12) Maintain an inventory and maps of land use controls (LUCs) resulting from response decisions, and at active installations, integrate them into the installation master plan.

(13) Establish procedures for evaluating implemented remedies that:

- (a) Optimize the overall performance and effectiveness of the remedy.
- (b) Control the operation and maintenance cost of remedies in the remedial operations phase.
- (c) Assess whether remedial action objectives specified in the ROD/DD for the site are being achieved and whether treatment systems are still needed.

(d) Determine whether different remedial action objectives or different technologies are more appropriate.

b. Army Defense Environmental Restoration Program. The DERP addresses sites at real property under U.S. jurisdiction, custody, and control of the Army to include: (LD: 10 USC 2701(c))

- (1) Active and excess U.S. Army and U.S. Army Reserve installations and facilities.
- (2) Federally owned or leased ARNG installations, activities, and properties.
- (3) Contractor activities, lessees, and other tenants on Army installations or facilities.
- (4) The Army DERP addresses contamination at sites on active installations in the three categories described previously: IRP, MMRP, and BD/DR. The Army funds the DERP at active installations with Environmental Restoration, Army (ER, A) funds authorized and appropriated specifically to execute the DERP at active installations. ER, A is “fenced” and must be used for the restoration projects in the approved IAP for sites included in AEDB–R. (LD: 10 USC 2703)

(5) For IRP category sites:

(a) Conduct screening for past use of hazardous substances, pollutants and contaminants and the potential for contamination (or reassessment, if appropriate) at active Army and Federally-owned NGB–ARNG installations and sub-installations. (LD: 10 USC 2701)

(b) Conduct studies and response actions in accordance with the annual IAP approved by the GC (or equivalent).

(c) Establish an information repository and administrative record to provide public access to information about the cleanup activities at the installation. (LD: 42 USC 9613 and 9620)

(d) Establish an effective community involvement program, to include a community relations plan (CRP) at NPL sites (LD: 40 CFR 300.155) or public involvement and response plan for Army installations with an active cleanup program.

(e) Negotiate a Federal Facilities Agreement/Interagency Agreement at NPL sites complying with the DOD approved model agreement. (LD: CERCLA Section 120(e)(2) and 120(e)(4))

(f) Establish a Technical Review Committee (TRC) or Restoration Advisory Board (RAB) when applicable to allow the local community an opportunity to participate in the remedy selection process. Form a RAB at all BRAC installations where closure involves the transfer of property to the community, unless otherwise determined by the ACSIM. At installations on the NPL, a RAB will meet the requirements of paragraph c, Section 2705, Title 10, United States Code (10 USC 2705(c)) for a TRC. (LD: 10 USC 2705(d))

(g) Initiate action to have the site expeditiously deleted from the NPL by EPA once all site completion criteria are met, or request partial delisting of specific operable units, as appropriate. (LD: 40 CFR 300.425)

(6) For MMRP category sites: conduct response actions to address military munitions or the chemical residues of munitions at active installations.

(7) For BD/DR: BD/DR program category responses for buildings unused since 17 October 1986 may be undertaken when the requirement to demolish the building(s) is an integral part of activities under an IRP or MMRP category response. Any other ER, A funded BD/DR program category response for buildings unused since 17 October 1986 may only be undertaken when specifically authorized by the Assistant Deputy Undersecretary of Defense (Environment, Safety, and Occupational Health) (ADUSD (ESOH)).

c. Base realignment and closure.

(1) The Base Realignment and Closure (BRAC) cleanup program addresses sites at installations designated for closure or realignment by Base Closure legislation and is funded from the Base Closure Account (BCA) using DOD’s DERP authority. At closing installations, cleanup requirements consist of previously identified IRP and MMRP category requirements plus those closure related compliance actions required for property transfer. The BRAC cleanup program may address BD/DR category requirements for unsafe buildings or structures unused since 17 October 1986, where the activities are an integral part of actions under the IRP or MMRP category responses.

(2) Army activities will—

- (a) Update BRAC IAPs annually.
- (b) Ensure that BRAC cleanup activities comply with the ADUSD(E) policy guidance for Fast Track Cleanups and the Base Redevelopment and Realignment Manual.
- (c) Strive to transfer BRAC property to productive reuse.

d. Compliance-related cleanup.

(1) The CC includes actions to address contamination at Army facilities overseas; contamination resulting from

operations that have occurred since October 1986 (that is, non-DERP) at Army Active, Excess, and Special installations, and ARNG Federally owned facilities; and contamination at non-Federally-owned, Federally-supported ARNG facilities.

(2) The CC projects are projects needed to further investigate, and if necessary, conduct response actions to address contaminants that present an imminent and substantial threat to human health and/or the environment.

(3) Undertake CC projects when needed to address the following requirements:

(a) Releases under CERCLA or RCRA corrective action that are not eligible for funding under the DOD Management Guidance for the DERP (for example, releases that occurred on or after 17 October 1986).

(b) Cleanup mandated under authority of Federal and/or State environmental laws that are not being addressed under other cleanup programs (for example, DERP, BRAC, and so forth).

(c) Releases from HW treatment, storage, or disposal facilities (TSDF) or solid waste landfills that are undergoing RCRA closure.

(d) Releases from a RCRA underground storage tank (UST) if it was in service as of 17 October 1986.

(e) Army contamination beyond the installation boundary where necessary to protect human health and the environment (and not eligible for DERP funding).

(f) Contamination at overseas installations in accordance with DODI 4715.8.

(g) Contamination at non-Federally-owned, Federally-supported ARNG sites, regardless of date.

(h) Munitions responses at ranges closed after 30 September 2002.

(i) Response actions outside the boundaries of operational ranges required as a result of the Range Assessment Program established in accordance with DODD 4715.11.

(j) Non-DERP environmental liabilities at excess installations.

(k) Army Commands (ACOMs), Army Service Component Commands (ASCCs), and Direct Reporting Units (DRUs) with special installations will program and budget mission or working capital fund resources to address non-DERP, CC eligible releases. Special installations are eligible for Army DERP consistent with DERP eligibility requirements.

e. Other.

(1) *Formerly used defense sites (FUDS).*

(a) Under the DERP, the FUDS Program addresses properties that were under the jurisdiction of the Secretary of Defense and owned by, leased by, or otherwise possessed by the United States, or otherwise under the operational control of the Secretary of Defense or the military components that were transferred from DOD control prior to 17 October 1986. The FUDS program addresses sites in the following program categories: IRP; MMRP; and BD/DR. Also eligible are former DOD sites that were transferred after 17 October 1986, but that have a completed Findings and Determination of Eligibility (FDE) and a final inventory project report (INPR), signed prior to 30 September 2000 stating that the property was FUDS eligible, and that were listed in Restoration Management Information System (RMIS) as a FUDS property prior to 30 September 2000.

(b) The ADUSD (ESOH) establishes overall FUDS program policy and budget guidance. Regardless of which military service formerly controlled the property, the Army is the executive agent (EA) to administer the FUDS program. General policy on management and execution of the FUDS program is provided in the DOD Management Guidance for the DERP and the FUDS Program Charter. The ASA (I&E) and ACSIM are, respectively, the Army Secretariat and Army Staff (ARSTAF) proponents for the FUDS program. The USACE is responsible for management and execution of the FUDS Program.

(c) Specific FUDS execution guidance and procedures are provided in USACE's Engineer Regulation (ER) 200-3-1.

(2) *Defense and State Memoranda of Agreement/Cooperative Agreement (CA).*

(a) DOD, through the Defense and State Memoranda of Agreement/Cooperative Agreement (DSMOA/CA) program, involves State/Territorial governments in the environmental restoration of DOD installations including FUDS properties. The Office of the Secretary of Defense (OSD) has given the Army the authority to negotiate DSMOAs and recommend approval of DSMOAs to the ADUSD (ESOH). USACE executes the DSMOA/CA Program for all military services.

(b) Authority for this program is contained in 10 USC 2701(d) which allows the Secretary of Defense to enter into agreements on a reimbursable basis with states/territories to support DERP cleanup efforts at DOD installations. The DSMOA/CA program does not apply to compliance-related cleanup (CC). Specific criteria, funding information, and services eligible for State reimbursement for this program are contained in Part 28835, Title 57, Federal Register (57 FR 28835), dated 29 June 1992.

(c) Funding for the Army's contribution to the DSMOA/CA Program will be provided by the Army from the ER, A; Environmental Restoration, FUDS (ER, F); and BCA accounts.

(3) *Memorandum of Understanding between DOD and the Agency for Toxic Substances and Disease Registry.*

(a) DOD has entered into a MOU with ATSDR that delineates the responsibilities and procedures under which

Agency for Toxic Substances and Disease Registry (ATSDR) and DOD will conduct activities mandated in CERCLA. The MOU is the single document governing the relationship between DOD and ATSDR.

(b) Funding for the ATSDR to conduct Army-related studies under the MOU with DOD is provided by the Army from the ER, A; ER, F; and BCA accounts. Each military component funds its own ATSDR services.

(c) Refer to the U.S. Army Environmental Restoration Programs Guidance Manual and the Guidelines for the Coordination of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Activities Between Agency for Toxic Substances and Disease Registry and Department of Defense for additional information about the roles of ATSDR and DOD components in DOD cleanup activities.

(4) *Exemptions.* The above guidance for environmental cleanup does not apply to:

(a) Contractor-owned and contractor-operated facilities that are not on real property controlled by the Army.

(b) Properties that are not on real property that is or was owned, controlled, or otherwise under the jurisdiction of DOD (that is, a third-party site).

(c) Responses to releases that occur solely as a result of an act of war.

(d) Emergency response to and cleanup of a release from any routine operation, management, or maintenance at an operating Army facility or site that does not become a cleanup project.

(e) Routine range maintenance and sustainment activities at operational ranges.

Chapter 13

Environmental Quality Technology

The Environmental Quality Technology (EQT) effort is planned, programmed, and budgeted for at Headquarters, Department of the Army (HQDA) level. It focuses investments on the Army's most pressing needs and provides visibility of the Army's environmental research, development, test, and evaluation (RDT&E) efforts. EQT requirements are identified and validated through the Army Environmental Requirements and Technology Assessments (AERTA). The AERTA requires a review of new and existing requirements to determine if changes in doctrine, organization, training, materiel, leadership and education, or personnel and facilities (DOTMLPF) will resolve the requirement(s). Only those requirements requiring a materiel solution will be included in the AERTA. Requirements with other than materiel solutions will be forwarded to the appropriate proponent/organization for action. The EQT Program Operating Principles, October 2001, provide detailed guidance.

13-1. Environmental Technology Technical Council

a. The Army established an Environmental Technology Technical Council (ETTC) to provide management oversight and endorsement of the EQT programs formulation process. The Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) (DASA (ESOH)) and the Director, Research and Laboratory Management, Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (OASA (ALT)) co-chair the ETTC.

b. The ETTC consists of members representing the operational, logistics, scientific and engineering, planning, resource management, infrastructure, and medical interests of the Army. The ETTC consolidates and prioritizes Army environmental technology needs, and articulates the requirements to the appropriate proponent.

c. The ETTC establishes technology teams as needed to carry out its assigned functions.

d. The ETTC meets as needed to endorse new programs and to review technology priorities and program execution.

13-2. Policy

Provide environmental quality RDT&E and technology transfer to resolve the Army's EQT requirements. EQT efforts are integrated and coordinated with other Defense RDT&E initiatives, such as the National Defense Center for Environmental Excellence (NDCEE), Strategic Environmental Research and Development Program (SERDP), the Environmental Security Technology Certification Program (ESTCP), and Federal and State government and international forums, to leverage their technology output, reduce total life-cycle costs, and resolve these EQT requirements in a timely manner.

a. Focus efforts on high priority user defined requirements.

b. Implement technology development when technology is not commercially available.

c. Provide an adequate science and engineering base to sustain future technology needs.

d. Focus efforts of the Army EQT program to support and enhance technology transfer of validated capabilities and processes.

13-3. Legal and other requirements

10 USC 160, Sections 2706 and 2709.

13–4. Major program goals

The Army goal for EQT is to enable mission readiness through the development and exploitation of technology that provides sustainable installations, training lands, and weapons systems.

13–5. Major requirements

- a.* Identify and document user requirements and invest in high priority environmental requirements providing validated solutions to the end-user for qualification, production, or fielding.
- b.* Leverage other DOD and Congressionally-directed initiatives to help resolve Army environmental requirements.
- c.* Use the EQT requirements to prioritize the Army funded efforts at the NDCEE.

**Chapter 14
Operational Noise****14–1. Policy**

- a.* Evaluate and document the impact of noise produced by ongoing and proposed Army actions/activities and minimize annoyance to humans to the extent practicable.
- b.* Develop installation noise management plans as appropriate.
- c.* Reduce noise to acceptable levels in on-post noise sensitive locations (for example, medical treatment, education, family housing) through appropriate land use planning and/or architectural and engineering controls.
- d.* Monitor, record, archive and address operational noise complaints.
- e.* Develop and procure weapons systems and other military combat equipment (for example, electrical generators, etc.) that produce less noise, when consistent with operational requirements. Measure the noise emitted by all combat equipment and weapons systems to be used in training before deployed to units.
- f.* Procure commercially manufactured products, or those adapted for general military use that produce less noise, and comply with regulatory noise emissions standards.
- g.* Acquire property only as a last resort to resolve off-post noise issues.
- h.* Manage operational noise issues and community relations to maintain sustainable testing and training capabilities and prevent encroachment.

14–2. Legal and other requirements

Property and tort law; Noise Control Act of 1972, Quiet Communities Act of 1978; AR 95–1; AR 210–20; AR 350–19; and applicable State and local laws.

14–3. Major program goals

- a.* Control operational noise to protect the health and welfare of people, on- and off- post, impacted by all Army-produced noise, including on- and off-post noise sources.
- b.* Reduce community annoyance from operational noise to the extent feasible, consistent with Army training and materiel testing mission requirements.
- c.* Actively engage local communities in land use planning in areas subject to high levels of operational noise and a high potential for noise complaints.

14–4. Program requirements

- a.* Noise descriptors (metrics) appropriate for determination of compatible land use, and assessment procedures will be based on the best available scientific information.

(1) The day-night level (DNL) is the primary descriptor for military noise, except small arms, see table 14–1. The DNL is the time weighted energy average sound level with a 10-decibel (dB) penalty added to the nighttime levels (2200 to 0700 hours). The DNL noise metric may be further defined, as appropriate, by the installation with a specific, designated time period (for example, annual average DNL, average busy month DNL). The typical assessment period over which the noise energy is averaged is 250 days for Active Army installations and 104 days for Army Reserve and National Guard installations. The use of average busy month DNL is appropriate when the OPTEMPO is significantly different during certain peak periods of the year. For future land use planning and encroachment assessment purposes, a reasonable annual growth factor in activity (for example, 10 or 15 percent) may be assumed.

(2) Supplemental metrics, such as single event noise data (for example, Peak, PK 15(met) or CSEL), may be employed where appropriate to provide additional information on the effects of noise from test and training ranges. A-weighted maximum noise levels will be used to assess aviation low level military training routes (MTRs) and/or flight tracks.

(3) The use of average noise levels over a protracted time period generally does not adequately assess the probability of community noise complaints. Assess the risk of noise complaints from large caliber impulsive noise

resulting from testing and training activities, ex. armor, artillery, mortars and demolition activities, in terms of a single event metric, either peak sound pressure level (PK 15(met)) or C-weighted sound exposure level (CSEL). The metric PK 15(met) accounts for statistical variation in received single event peak noise level that is due to weather. It is the calculated peak noise level, without frequency weighting, expected to be exceeded by 15 percent of all events that might occur. If there are multiple weapon types fired from one location, or multiple firing locations, the single event level used should be the loudest level that occurs at each receiver location.

(4) Assess noise from small arms ranges using a single event metric, either PK 15(met) or A-weighted sound exposure level (ASEL).

(5) Use the land use planning zone (LUPZ) contour to better predict noise impacts when levels of operations at airfields or large caliber weapons ranges are above average.

(6) Use available DOD noise assessment software as the primary means of operational noise assessment.

(7) Prepare noise maps showing noise zones and limits as defined in tables 14–1 and 14–2.

(8) Manage noise-sensitive land uses, such as housing, schools, and medical facilities as being acceptable within the LUPZ and noise zone I, normally not recommended in noise zone II, and not recommended in noise zone III. These noise zones are defined in table 14–1.

(9) Single event noise limits in table 14–2 correspond to areas of low to high risk of noise complaints from large caliber weapons and weapons systems. These should be used to supplement the noise zones defined in table 14–1 for land use decisions. Noise sensitive land uses are discouraged in areas where PK 15(met) is between 115 and 130 dB; medium risk of complaints. Noise sensitive land uses are strongly discouraged in areas equal to or greater than PK 15(met) = 130 dB; high risk of noise complaints. For infrequent noise events, installations should determine if land use compatibility within these areas is necessary for mission protection. In the case of infrequent noise events, such as the detonation of explosives, the installation should communicate with the public.

(10) Transportation and industrial noise will be assessed on a case by case basis using appropriate noise metrics, including U.S. Department of Transportation guidelines.

b. Address issues concerning building vibration and rattle due to weapons blast through the appropriate subject matter experts and legal counsel.

c. Address noise impacts on domestic animals and wildlife, as required, through the study of each species' response or a surrogate response to noise. The noise levels set forth herein apply to humans only and do not apply to domestic animals or wildlife.

Table 14–1
Noise Limits for Noise Zones

Noise zone	Noise limits (dB)	Noise limits (dB)	Noise limits (dB)
	Aviation ADNL	Impulsive CDNL	Small arms — PK 15(met)
LUPZ	60 - 65	57 - 62	N/A
I	< 65	< 62	<87
II	65 - 75	62 - 70	87 - 104
III	>75	>70	>104

Legend for Table 14-1:

dB=decibel

LUPZ=land use planning zone

ADNL=A-weighted day-night levels

CDNL=C-weighted day-night levels

PK 15(met)=Single event peak level exceeded by 15 percent of events

<=less than

>=greater than

N/A=Not Applicable

Table 14–2
Risk of Noise Complaints by Level of Noise

Risk of Noise complaints	Large caliber weapons noise limits (dB) PK 15(met)
Low	< 115
Medium	115 - 130
High	130 - 140
Risk of physiological damage to unprotected human ears and structural damage claims	> 140

Legend for Table 14-2:

dB = decibel

PK 15(met) = Single event peak level exceeded by 15 percent of events

Notes:

¹ Although local conditions regarding the need for housing may require noise-sensitive land uses in Noise Zone II, on or off post, this type of land use is strongly discouraged. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the noise-sensitive land use would not be met if development were prohibited in Noise Zone II.

² Where the community determines that these uses must be allowed, measures to achieve an outdoor to indoor noise level reduction (NLR) of at least 25 dB to 30 dB in Noise Zone II, from small arms and aviation noise, should be incorporated into building codes and be in individual approvals. The NLR for communities subject to large caliber weapons and weapons system noise is lacking scientific studies to accomplish the recommended NLR. For this reason it is strongly discouraged that noise-sensitive land uses be allowed in Noise Zone II from large caliber weapons.

³ Normal permanent construction can be expected to provide a NLR of 20 dB, for aircraft and small arms, thus the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation, upgraded Sound Transmission Class (STC) ratings in windows and doors and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels or vibrations.

⁴ NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers, can help mitigate outdoor noise exposure NLR particularly from ground level aircraft sources. Barriers are generally not effective in noise reduction for large arms such as artillery and armor, large explosions, or from high-level aircraft sources.

Chapter 15

Program Management and Operation

15–1. Structure and resourcing

a. Army Environmental Funding Policy.

(1) Army organizations are responsible for addressing environmental requirements for activities under their purview to ensure timely compliance with legal mandates, and for sustaining environmental stewardship.

(2) Environmental requirements must be funded from the appropriate account of the proponent who has the responsibility for the action, not necessarily the Installations Program Evaluation Group (II PEG) environmental program accounts.

b. Programming and budgeting. Commensurate with their responsibilities, Army organizations (to include tenants) will plan, program, budget, and execute resources to:

(1) Mitigate actual or imminent health and environmental hazards.

(2) Comply with Federal, State and local statutes, regulations, agreements, and other judgments, applicable executive orders (EOs), Final Governing Standards (FGS), and legally-binding international agreements at overseas installations.

(3) Sustain the quality and continued availability of lands for essential operations, training, and testing by protecting natural and cultural resources.

(4) Maintain an adequately trained and staffed organization for environmental monitoring and program management.

(5) Employ cost-effective pollution prevention and reuse/recycle-based solutions in all mission areas as the preferred approach for meeting compliance requirements, reducing operating costs, and maintaining environmental stewardship.

(6) Focus environmental quality technology (EQT) research and innovative applications to achieve program goals and reduce program costs.

(7) Address environmental quality costs associated with weapons system life cycle within the context and requirements of the life cycle cost estimate, and adequately assess these costs in the acquisition milestone review process.

c. Investment strategy. Army organizations will make prudent investments in environmental initiatives that support mission accomplishment, enhance readiness, reduce future funding needs, prevent or mitigate pollution, improve compliance, and reduce the overall cost of compliance with applicable environmental requirements.

d. Payment of fines and penalties for environmental violations. Fines, penalties, and supplemental environmental project (SEP) costs will be paid by the organization against which the fine or penalty has been assessed, using applicable Army appropriations unless otherwise required by law. Payment of fines and penalties will be charged to the

funding account of the operation causing the violation. Contracting Officers will ensure that contracts require contractors to pay fines or penalties resulting from their operations.

e. Compliance agreements and consent orders. Compliance agreements and consent orders attributable to a tenant's mission and/or operations will be financed with mission funds and must be coordinated through the mission chain of command.

15-2. Environmental Quality Control Committee

a. Installations will establish Environmental Quality Control Committees (EQCCs) chaired by the Garrison Commander (GC). In overseas areas, the EQCC may be organized at the appropriate military community level. The EQCC will include major and sub-installations and tenant activities. EQCCs will meet at least quarterly and document decisions.

b. The EQCC should consist of members representing the operational, logistics, engineering, planning, resource management, legal, medical, environmental, morale, welfare, and recreation (MWR), commissary, exchange service, and safety interests of the command, including military installation tenant activities.

c. The EQCC will help to plan, execute, and monitor actions and programs with environmental implications. The committee will identify issues, make recommendations, and advise the GC.

15-3. Environmental training, awareness, and competence

a. All personnel who perform tasks that can cause significant environmental impacts will be competent on the basis of appropriate education, training, and/or experience.

b. Personnel in non-environmental managerial functions will receive appropriate technical and/or awareness training.

c. All organizations will identify training needs (including legally mandated training), document training taken, and evaluate effectiveness.

d. Supervisors are responsible to ensure their employees are properly trained.

e. Organizations should use the most effective and efficient education and training sources available, such as academia, private vendors, Federal or State agencies, workshops and conferences, and distributive training. Army organizations will develop training courses only when such training courses do not exist. Proposals to develop training courses will be coordinated with higher headquarters and Training and Doctrine Command (TRADOC).

f. The U.S. Army Engineer School (USAES) is responsible for developing and integrating environmental considerations into personnel training.

g. All organizations will ensure applicable personnel at all levels conform to a single installation-wide environmental management system (EMS).

15-4. Communications

a. Internal. Organizations at all levels will establish and maintain procedures for internal communication among all their levels and functions and report environmental incidents.

b. External.

(1) Organizations at all levels will establish and maintain procedures for receiving, documenting, and responding to communication from external interested parties in coordination with the Public Affairs staff.

(2) Organizations will only provide information on publicly accessible, non-restricted Army environmental Web sites that have been properly cleared for release by the appropriate Public Affairs Office (PAO).

(3) Information available to the public through the Internet will be consistent with guidance issued by the Army Chief Information Officer/G-6 (CIO/G-6).

(4) All environmental agreements must be reviewed and approved by the next higher echelon. Proposed agreements and their review will include consideration of long-term Army resource commitments. In addition, environmental agreements with regulatory agencies will be forwarded through command channels to the JALS-EL for review prior to signature, and those resulting from tenant activities will be coordinated with the tenant, the Army Commands (ACOMs), Army Service Component Commands (ASCCs), Direct Reporting Units (DRUs), National Guard Bureau-Army National Guard (NGB-ARNG), and the Installation Management Command (IMCOM), if applicable.

(5) Army elements will include public involvement as a component of the decision making process to build mutual understanding with interested parties through two-way communication. Dialogue will strive to reduce miscommunication and foster a mutually beneficial exchange of information.

15-5. Real property acquisition, leases, outgrants, and disposal transactions

a. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires the Army to perform certain actions to assess the environmental condition of property prior to entering into designated real property transactions. These transactions include fee acquisition of real property on behalf of the United States, deeds divesting title from the United States, transfers of jurisdiction between federal agencies, and leases of Army-controlled real property to non-Army entities.

b. This section is not applicable to reassignments within Army or DOD elements; to acquisition of less than fee; or

to other outgrants (license, easement, or permit). However, the Environmental Condition of Property (ECP) requirements of this section apply, as a matter of policy, to DA licenses to the National Guard Bureau (NGB), licenses for State National Guard Components, and to state land acquisition where the land will be provided for federally funded construction. Army proponents will conduct these transactions in accordance with the procedures found in AR 405–10; AR 405–80; AR 405–90; Section 2688, Title 10, United States Code (10 USC 2688); 32 CFR 651; and Part 800, Title 36, Code of Federal Regulations (36 CFR 800). Base Realignment and Closure (BRAC) actions will comply with DODI 4165.66M, or its successor. The Army proponent may elect to perform an environmental site assessment for the inapplicable transactions. (LD: 42 USC 9620(h))

c. Except as noted in *b.* above, Army will assess, determine, and document the environmental condition of transferable property in an ECP Report. The ECP Report will summarize historical, cultural, and environmental conditions and include references to publicly available and related reports, studies, and permits. The report will provide an accurate summary of the environmental condition of the property. If the property will be deeded or leased, the site may require additional site characterization to meet applicable regulatory requirements or to help value the property. (Note: The GC/Army proponent is responsible for initiating the ECP Report.)

(1) An ECP Report will normally result in a conclusion regarding the advisability of the transaction and forms the basis for Findings of Suitability, if applicable to the transaction. Environmental contamination and potential environmental liabilities associated with properties being considered for acquisition, lease, and disposal will be determined prior to completing the transaction. The ECP Report and, if applicable, the Findings of Suitability, are an integral part of the Report of Availability or the Disposal Report which form the basis for the Army official with delegated authority to approve the real property transaction and for USACE to prepare the required legal documents, land use controls and covenants. (Note: Findings of Suitability are required for BRAC disposals, both transfers and leases, but are not required for active installation leases.) (LD: 42 USC 9620(h))

(2) Content of the ECP Report depends upon the nature of the transaction and the proposed transferee/lessee. Transfers or leases between the Army and non-federal entities will require at a minimum, a Phase I ECP Report. Where conditions indicate uncertainty regarding the condition of property, a Phase II ECP Report is also required.

(3) The ECP Report will comply with applicable American Society for Testing and Materials (“ASTM”) Standards, such as ASTM E1527, E1903, and D6008 and will be consistent with the DOD Base Redevelopment and Realignment Manual (BRRM) for BRAC actions.

(4) An ECP Report is optional for reassignments within the Army and between Army and another DOD component depending on whether the HQDA approval authority deems it necessary. Those reassignments without an ECP Report should have a statement describing the environmental condition with the package forwarded to HQDA for approval. (PD)

(5) For non-BRAC actions, the ECP report will be attached to the environmental section of the Report of Availability or Disposal Report (AR 405–80 and AR 405–90) that is submitted to the Army decision-making official.

(6) Fee acquisitions and fee acquisition by State Guard components for land that will be provided for federally funded construction require an ECP Report to comply with EPA’s “All Appropriate Inquiry” rules under CERCLA prior to obtaining title to the real property so as to preserve defenses to CERCLA liability as an innocent land owner, bona fide prospective purchaser, or contiguous property owner and to reduce risk to Army and ensure that Army pays appropriate consideration for the property. The Army component will perform due diligence in determining the environmental condition of the property using applicable Environmental Protection Agency guidelines and applicable American Society for Testing and Materials (“ASTM”) Standards on real property acquisition (ASTM E 1527). (LD: 42 USC 9620)

(7) The activity initiating the property transfer or lease will include the ECP Report with the Disposal Report or Report of Availability for the transaction.

d. Active installation leases and non-lease outgrants (easements, license, permit):

(1) The environmental section of the Report of Availability (ROA) (AR 405–80) will be used to document the environmental condition of the property being leased by active installations. There is no requirement to prepare a FOSL. The non-BRAC ECP included with the ROA will include, as an appendix, the appropriate environmental protection provisions necessary for continued human health and environmental protection.

(2) The GC (or equivalent) or the NGB having accountability for the real property at the installation may determine that the environmental section of the ROA alone may be sufficient to document environmental requirements for permits, licenses, easements, and similar real estate actions where environmental concerns are very minor. Under these circumstances an ECP report would not be required.

(3) An ECP report will be done as an exception to this section when licenses are issued to state National Guard components; when hazardous materials will be stored for one year or more or disposed on Army property except when authorized by 10 USC 2692 (as amended); and where the authorized use of Army lands and facilities poses a hazard to human health or the environment. Leasing space to others for trailer sites or automatic teller machines (ATMs) does not require an ECP Report except where extraordinary circumstances exist.

e. The GC (or equivalent) is responsible for determining the appropriate ECP category (ASTM D5746) for a property being transferred based on the results of the ECP Report and actions taken to address contamination. (PD)

f. For real property transactions initiated by non-Army parties: (PD)

(1) The party initiating the transaction is responsible for funding and completing the ECP Report.

(2) The GC/Army proponent should approve the ECP Report.

(3) The Army may prepare the ECP Report, even though others initiated the transaction, if it has demonstrable benefit to the Army.

g. For non-BRAC transfers when GSA is the disposal agent, Army prepares the ECP Report. However, disposal by GSA is not considered a transfer of jurisdiction to GSA. The level of detail for the ECP Report will be coordinated with GSA. (PD)

h. Findings of Suitability are listed below:

(1) The Finding of Suitability to Transfer (FOST) / Finding of Suitability for Early Transfer (FOSET)/or BRAC Finding of Suitability to Lease (FOSL) will certify that the property is compatible with the proposed use and that the use restrictions or remedies in place (if any) are protective of human health and the environment. (PD)

(2) Deeds divesting title or leases executed under BRAC or other special legislative authority will proceed only after a FOST/FOSET/FOSL.

(3) A FOSET is required when transferring title to property pursuant to the provisions of CERCLA 120(h)(3)(c) (early transfer authority), when remedial action has not been completed prior to transfer. (LD: CERCLA 120(h)(3)(c)) (PD)

(4) A FOST is not required for deeds divesting title when disposed by the General Services Administration (GSA).

(5) Responsibility for environmental remediation for transfers or interchanges between the Army and other federal entities will be addressed in the Memorandum of Agreement between the Army and the transferee. The Army requires an ECP Report which will be initiated per paragraph *f.* above and provided to the transferee.

(6) The BRAC FOST/FOSET/FOSLs will be coordinated with regulators and made available to the public for their review. (PD)

i. Review and approval authorities are listed below:

(1) The IMCOM, Army commands or service component commands and direct reporting units with special installations, or Army National Guard (NGB-ARNG) will review and approve ECP Reports in coordination with the affected organizations. (PD)

(2) Approval authorities for ECP Report, FOST, FOSET, and BRAC FOSL documents for property disposals are in table 15-1 below. (PD)

(3) The Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) (DASA (ESOH)) will—

(a) Recommend approval for fee acquisition of property with an ECP Category designation of 5 or above or with known or suspected munitions and explosives of concern (MEC);

(b) Recommend approval for proceeding with the transfer to non-DOD federal agencies for properties with known or suspected MEC;

(c) Approve the FOSTs/BRAC FOSLs and approve the ECP report for non-BRAC leases for properties with known or suspected munitions and explosives of concern (MEC); and

(d) Approve all FOSETs

(4) The approving official will ensure that the document(s) receive appropriate legal and environmental professional review prior to approving the document(s).

j. Real property transactions require preparation of appropriate National Environmental Policy Act (NEPA) documentation per 32 CFR Part 651. (LD: 32 CFR 651)

k. Lease Termination. Upon termination of any lease, the Army proponent and lessee may jointly conduct a final lease close out using the ECP Report funded by the lessee to ascertain any changes in the environmental condition of the subject property. If the lessee refuses to participate, the GC/Army proponent will conduct the final assessment at the lessee's expense and provide a copy to the grantee. If an environmentally significant change has occurred, it will be documented as an amendment to the ECP Report, or a previous environmental site assessment report, if one was done, and the lessee will be required to make suitable compensation. The lessee will be made aware of these requirements and procedures in the original lease document. (PD)

l. Lease Renewals. ECP requirements must be met before renewing existing leases. If the lease did not have an environmental site assessment performed originally, an ECP must be done prior to renewal. For renewal of existing leases that have previously had an ECP, or other versions of site assessment documents, the GC/Army proponent must ascertain if environmental conditions have changed. If an environmentally significant change has occurred, it will be documented as a supplement or amendment to the original assessment report. An environmentally significant change involves the storage of a hazardous substance for a year or more, a known release of such substance, or its disposal on the property. The revised report will be processed in accordance with paragraph 15-5c above. A copy of the ECP report and/or any supplements or amendments will be provided to the grantee. (PD)

m. See also Leases, Easements, and Other Special Land Uses, paragraph 4–3d(2) and Conservation Reimbursable Agricultural/Grazing Outleasing and Forestry Programs, paragraph 4–3d(8).

n. Table 15–2 summarizes the documents required for the various types of real property acquisition, leases, and disposal transactions.

Table 15–1
Property disposal approval authorities^{1, 3}

DOCUMENT	PROGRAM		
	ACTIVE	LEGACY BRAC	BRAC 05
ECP Category Designation ²	Garrison Commander	Garrison Commander	Garrison Commander
ECP Report	IMCOM ⁴	BRAC D	IMCOM ⁴
FOST ⁵	ECP 1–4: IMCOM ⁴	ECP 1–4: BRAC D ⁴	ECP 1–4: IMCOM ⁴
	ECP 5–7: N/A	ECP 5–7: N/A	ECP 5–7: N/A
FOSET ⁵	ECP 5–7: DASA (ESOH)	ECP 5–7: DASA (ESOH)	ECP 5–7: DASA (ESOH)
FOSL	Not Required	ECP 1–7: BRAC D ⁴	ECP 1–7: IMCOM ⁴

Notes:

¹ The approving official will ensure that the document(s) receive appropriate legal and environmental professional review prior to approving the document(s).

² DOD ECP Designation (ASTM D5746).

³ Transactions with known or suspected MEC require DASA (ESOH) approval.

⁴ Army commands or service component commands and direct supporting units with special installations and NGB exercise this authority for their installations. Approval authority may delegate ECP 1–2 to installations.

⁵ Documents are not required for GSA transfers; refer to AR 405–90.

Table 15–2
Documents required

DOCUMENT	ECP Report ⁵	FINDING OF SUITABILITY
ACQUISITION		
Fee title for USA	Yes	No
Less than Fee (easement, permit, license)	No	No
Inlease ¹	No	No
DISPOSAL DOCUMENTS		
Deed divesting title from USA	Yes	FOST/FOSET
Report as Excess to GSA ²	Yes	No
Transfer to another Fed Agency	Yes	No
Reassignment within DA or DOD ³	Optional	No
Release or termination of less than fee estate ⁴	No	No
OUTGRANTS		
Lease Documents	Yes	No, use ROA to document
Other outgrants (license, easement, permit)	No, use ROA to document	No, use ROA to document
License to NGB	Yes	No

Notes:

¹ Type of less than fee; however, an ECP may be done for large, long-term leases.

² Reporting as Excess to GSA is not a transfer or reassignment to GSA.

³ Within DoD elements, doing an ECP Report is optional for those reassignments requiring HQDA approval (see para 15–5(c)(4) above). The Army proponent will consult the HQDA activity requiring approval prior to initiating a Report of Availability without an ECP Report.

⁴ Release, Affidavit, or other non-deed document – if a deed is required, then follow deed policy.

⁵ The ECP Report will be forwarded with the ROA or Disposal Report.

15–6. Military construction and Morale, Welfare, and Recreation Construction on Army installations

Military Construction (MILCON) includes major and minor construction projects funded by Military Construction, Army (MCA); Military Construction, Army Reserve (MCAR); Military Construction, National Guard (MCNG); Army Family Housing (AFH); Defense MILCON; and Tenant Service MILCON. For specific guidance for MILCON planning and environmental/safety remediation see AR 415–15, and AR 210–20. Morale, Welfare, and Recreation (MWR) construction includes Army appropriated fund (APF) and non-appropriated fund (NAF) construction depending on the type of facility (see AR 215–1).

a. Pre-construction site selection. Preparation of environmental documentation and site survey is considered advance planning and will be funded from other than MILCON or NAF. The project proponent at the installation is responsible for funding and executing the environmental survey, unexploded ordnance survey, and associated documentation of a proposed MILCON/MWR construction site before site selection. Installations will coordinate site selection activities with the supporting IMCOM Regional Office.

(1) When selecting a proposed site, the installation should consider locations that avoid unnecessary environmental remediation and/or mitigation costs. However, installations should consider using all existing infrastructure wisely, to include locations that may require some degree of remediation and/or mitigation. A final determination should be based on sound economic and relative risk analysis.

(2) If a proposed project must be sited in a known environmentally sensitive area where an Army cleanup program has already cleaned to current or reasonably anticipated future land use, the cost of design and construction of mitigation measures required as a direct result of MILCON or NAF projects may be paid from MILCON funds if included in the cost estimate and description of work on the DD Form 1391, FY_ Military Construction Project Data. AR 415–15 and DA Pam 415–15 provide detailed guidance for completing DD Form 1391 for MILCON and NAF.

(3) Non-Army tenants on Army installations are responsible for funding environmental surveys and associated documentation of proposed MILCON or NAF construction sites where they are the user.

b. Site categorization. The IMCOM/ACOM/ASCC/DRU/NGB–ARNG is responsible for certifying the site categorization. Sites are classified into the three following categories.

(1) Category I - There is no reason to expect contamination will be encountered during the construction.

(2) Category II - There is no known contamination, there remains some potential that contamination may be encountered during construction.

(3) Category III - The site is known to be contaminated or there is strong suspicion contamination will be encountered during construction.

c. Site clearance standards. Site categorizations will be completed in accordance with:

(1) ASTM D6008–96: Standard Practice for Conducting Environmental Baseline Surveys.

(2) ASTM E1527–00: Environmental Site Assessments: Phase I Site Assessment Process.

(3) ASTM E1903–97: Environmental Site Assessments: Phase II Site Assessment Process.

d. Discovered contamination. The installation or MILCON proponent is responsible for the remediation/cleanup of environmental contaminants discovered during the execution of a MILCON or NAF construction project.

(1) If removal of discovered contamination adequately addresses the environmental condition of the property for construction and a decision of no further action is secured by the installation, the project should proceed.

(2) If initial response activities are not adequate and additional remediation/cleanup is required, the project proponent is responsible for identifying the environmental requirements and securing funds.

(3) Construction contractor costs (such as direct delays costs and unabsorbed or extended overhead) incidental to discovery, remediation and cleanup, however, will be MILCON funded or APF or NAF funded as appropriate for MWR projects to the extent it is determined that the Army is responsible and liable for such costs.

15–7. National security emergencies and exemptions/waivers

a. In conducting their mission, GCs should anticipate and allow for mission surge conditions that could result during times of national security emergencies, including but not limited to contingency operations, suppression of insurrection, humanitarian and civic assistance, peace-keeping activities, and disaster relief. In cases where mission surge conditions could potentially exceed permit limitations or other environmental requirements, the GC should request an exemption in accordance with this section.

b. In evaluating possible courses of action, the GC will consult with legal counsel and determine the appropriateness of seeking an environmental exemption or waiver.

c. In national security emergencies, the requirements of this regulation remain in effect unless waived by the ACSIM.

d. If a GC anticipates that surge conditions could result in a violation of Federal or State environmental law or regulation, as soon as practicable, the GC should consult with the appropriate Federal, State, or local authorities on a mutually agreeable course of action. If a satisfactory resolution cannot be agreed upon, the GC will submit a request for a national security exemption to HQDA, DAIM–ED through the chain of command. The request must include:

(1) Identification of the action prompting need for exemption;

- (2) The statute(s) from which an exemption is sought;
- (3) The applicable statutory exemption provision(s);
- (4) Adequate supporting information and justification for the exemption; and
- (5) Alternatives considered and the reasons they were not adopted.

e. ACSIM will coordinate with other Army staff (ARSTAF) elements and will forward the request with a recommendation to the Assistant Secretary of the Army (Installations and Environment) (ASA (I&E)), who may transmit the request to the Office of the Secretary of Defense (OSD) for disposition.

f. In the event an exemption is denied or cannot be granted in a timely manner, the ACSIM will provide specific guidance on the resolution of the conflicts identified in the request.

15–8. Army Environmental Program in Foreign Countries

a. Policy. This section clarifies environmental policy and requirements applicable to permanent installations or facilities located in foreign countries. This section does not apply to training, off-installation deployments, contingency operations, or those locations for which no DOD Environmental Executive Agent (EEA) has been designated.

(1) Army policy in foreign countries is to comply with applicable standards, criteria and regulations that preserve, protect, and enhance environmental quality and human health. These standards, criteria, and regulations include the country-specific FGS, DODI 4715.5, DODI 4715.8, EO 12088, and EO 12114.

(2) The FGS define the environmental standards for Army permanent installations in foreign countries. The FGS take precedence over requirements of this regulation unless otherwise specifically noted in this section. Army facilities in a foreign nation with no FGS will comply with DOD 4715.05–G and applicable international agreements.

(3) Only the designated DOD EEA can revise an FGS. In cases where it is necessary to comply with more protective criteria than the FGS prescribes, the GC must consult with the EEA.

(4) Waivers to an FGS may be granted only by the DOD-designated EEA or the Unified Command (combatant commanders) in accordance with the country-specific FGS and DOD designated EEA waiver policy.

(5) Hazardous waste (HW) that cannot be disposed of in accordance with the FGS will be returned to the United States or another location where the disposal criteria can be met. In addition to compliance standards for disposal, all Army organizations and activities will comply with the provisions of any applicable Status of Forces Agreement (SOFA) or other legally-binding international agreements respecting the shipping and storage of HW.

(6) An external Environmental Performance Assessment System (EPAS) assessment will be conducted at overseas installations in accordance with DODI 4715.5 and the country-specific FGS (generally this will be every 3 years).

(7) Environmental remediation at overseas installations is addressed in paragraph 12–4, and will be conducted in accordance with DODI 4715.8.

b. Program requirements. Program requirements for overseas activities are addressed throughout this regulation. Additionally:

(1) Army ACOMs, ASCCs, DRUs, IMCOM, and installations will comply with the provisions of DODI 4715.5, DODI 4715.8, and appropriate country-specific implementing guidance per the DOD designated EEA.

(2) GCs will consider the adverse impacts of installation activities on a property listed on the World Heritage List, European Union natural conservation site of importance, or a host nation's (HN) equivalent of the U.S. National Register of Historic Places (NRHP). Reasonable effort will be made to avoid or mitigate any adverse effects.

(3) GCs will consider the adverse impacts of installation activities on internationally protected animal and plant species and their habitat, to include flora and fauna in a HN's equivalent of the Endangered Species Act (16 USC 35 (ESA)). Reasonable effort will be made to avoid or minimize adverse effects on such resources.

(4) Army components (that is, Active, Reserve, ARNG) participating in joint operations will comply with the environmental annex as specified by combatant command plans (for example, an annex L to the operation plan (OPLAN)).

(5) Army commanders will report overseas violations through command channels to DAIM–ED, with a courtesy copy to JALS–EL.

15–9. Environmental Management System documentation and document control

a. Installations will establish and maintain information in paper or electronic form to describe the core elements of the management system and their interaction, and provide direction to related documentation.

b. Installations will establish and maintain procedures for controlling all documents required by the ISO 14001 standard to ensure that: they can be located; they are periodically reviewed, revised as necessary, and approved for adequacy by authorized personnel; the current versions of relevant documents are available at all locations where operations essential to the effective functioning of the EMS are performed; obsolete documents are promptly removed from all points of issue and points of use, or otherwise assured against unintended use; and any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified.

c. Documentation will be legible, dated (with dates of revision), and readily identifiable, maintained in an orderly

manner and retained for a specific period. Procedures and responsibilities will be established and maintained concerning the creation and modification of the various types of documents.

Chapter 16

Checking and Corrective Action

16-1. Environmental performance assessments and Environmental Management System audits

a. General.

(1) Garrison commanders (GCs) should maintain an inventory of compliance sites and activities with potential to impact the environment.

(2) Audits conducted under the Environmental Performance Assessment System (EPAS) will include all operations and activities within the installation boundary (including operational ranges, and other training areas), or a representative sample of similar activity types, and will evaluate overall environmental program performance and conformance with ISO 14001.

(3) Assessments will include tenant activities, outgrants, leases, and other activities under the purview of the Army.

(4) Generally, assessments will not include privatized facilities. However, special circumstances related to facility and/or associated land lease or ownership status could warrant their inclusion. Accordingly, installations will report the status of their privatized facilities to the U.S. Army Environmental Command (USAEC) EPAS Program Manager as soon as possible after being notified of a scheduled EPAS audit so that a determination regarding inclusion/exclusion can be made.

b. External assessments.

(1) CONUS external performance assessments are scheduled based on risk analysis and in consultation with HQDA and appropriate commands. Outside the continental United States (OCONUS) external assessments are conducted every three years in accordance with DODI 4715.5.

(2) External assessments will be conducted using a team of independent assessors not associated with the installation and having the necessary organizational and subject matter expertise. This expertise will include the requisite environmental media and regulatory expertise as well as expertise in the functional mission areas that are the subject of the assessment.

(3) External assessments will be conducted using Headquarters, Department of the Army (HQDA) approved protocols. OCONUS, these protocols will be based on the country-specific final governing standards (FGS).

(4) Individuals performing external assessments will provide required assessment data into the Army approved application/database (AEDB-EPAS) to assist in producing the draft and final Environmental Performance Assessment Report (EPAR) and the draft installation corrective action plan (ICAP).

(5) Army installations will prepare the draft ICAP, identify corrective actions, and secure resources for correction through the chain of command.

(6) Assessment results and ICAP will be made available to the Environmental Quality Control Committee (EQCC).

(7) Draft ICAP will be forwarded to affected units, Army Commands (ACOM), Army Service Component Commands (ASCC), Direct Reporting Units (DRU), and/or tenants for review.

c. Internal assessments.

(1) Internal assessments will be conducted annually, at a minimum, by installation personnel as part of their regular management, checking, and corrective action functions, unless an external assessment is conducted that calendar year.

(2) Army installations will provide required internal assessment data into the Army approved application/database (AEDB-EPAS) to assist in producing the draft ICAP.

(3) Internal assessments will include a review of previous assessments and draft ICAP, review corrective actions not completed, assess compliance with any new regulatory requirements, and address areas specified by higher command.

(4) Installations will notify their respective command when their internal assessment has been completed.

(5) Assessment results and ICAP will be made available to the Environmental Quality Control Committee (EQCC).

d. Installation Corrective Action Plan (ICAP).

(1) Each installation will prepare or revise a draft ICAP in accordance with Army requirements.

(2) The ICAP will track externally and internally reported compliance and program performance deficiencies.

(3) The ICAP will remain in draft.

e. Releasability. All draft assessment reports and supporting papers are internal working documents. The draft documents must be marked "for official use only" (FOUO) and distribution will be handled accordingly. All requests for release of reports will be referred to the appropriate installation Freedom of Information Act (FOIA) Officer.

f. Environmental Performance Assessment System (EPAS) in-progress review (IPR). The Director of Environmental

Programs (DEP) may convene an IPR as necessary to review the performance of the program and to identify and resolve issues.

16-2. Monitoring and measurement

a. Installation Management Command (IMCOM), National Guard Bureau-Army National Guard (NGB-ARNG), Army Commands (ACOMs), Army Service Component Commands (ASCCs), Direct Reporting Units (DRUs), installations, and tenants will establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of those operations and activities that can have an impact on the environment. This will include the recording of information to track performance, relevant operational controls, and conformance with the organization's environmental objectives and targets.

b. Monitoring equipment will be calibrated and maintained and records of this process will be retained according to installation standard operating procedures.

16-3. Army environmental information and reporting

a. *Army Environmental Information Policy.* Army environmental information is an asset that will be managed as part of the Army I&E information technology (IT) portfolio management. Environmental information investments will meet the Chief Information Officer (CIO)/Deputy Chief of Staff, G-6 (DCS, G-6) Army Knowledge Management (AKM) goals, adhere to the I&E IT domain governance process, and be incorporated into the Office of the Assistant Chief of Staff for Installation Management (OACSIM) Business Enterprise Architecture (BEA) strategy and plan.

b. *Program goal.* Army environmental information will facilitate planning, execution, monitoring, and reporting of programs at all activity levels in support of the Army mission. Environmental information and information tools will be built in standardized formats and incorporated into the Army enterprise architecture.

c. *Coordination requirements.* Army environmental reporting systems will be coordinated with the OACSIM Business Transformation Board of Directors (BT BOD).

(1) The DEP represents functional environmental information requirements at the BT BOD.

(2) USAEC represents technical environmental information requirements at the BT BOD.

(3) Environmental reporting systems will be executed in accordance with the OACSIM BEA Strategy and plan.

d. *Primary Systems.* The following are the Army's primary systems for data collection and reporting:

(1) *Army Environmental Data Base - Environmental Quality (AEDB-EQ).* The AEDB-EQ serves as a primary source of information for reporting the Army's environmental status to Senior Army Leadership, DOD, and Congress. AEDB-EQ tracks Army compliance with environmental laws (to include permits and enforcement actions) and regulations to determine Army progress towards meeting the DOD Measures of Merit (MOMs), and allows the Army to populate other required reports.

(2) *Environmental Restoration Information System (ERIS).* ERIS and ERIS Range document the Army environmental restoration and range program field data to support a central repository for Army installation chemical, geological, and remedial action data.

(3) *Army Environmental Data Base-Restoration (AEDB-R).* This is the database of record for collecting and reporting data for sites being cleaned up under the purview of Environmental Restoration, Army (ER, A) or Base Closure Account (BCA).

(4) *Army Environmental Data Base-Compliance-Related Cleanup (AEDB-CC).* This is the database of record that identifies and documents requirements for the cleanup of contamination at Army sites that are not eligible for the Defense Environmental Restoration Program (DERP).

(5) *Reimbursable Programs Tracking System (RPTS).* RPTS stores data used to report the financial elements of the agricultural grazing, reimbursable forestry, hunting, fishing and trapping fees, the DOD Forestry Reserve Account, and the Army Wildland Fire programs.

(6) *Army Environmental Data Base - Environmental Performance Assessment System (AEDB-EPAS).* The AEDB-EPAS serves as a primary source of information for reporting, collecting, tracking, and analyzing the Army's environmental compliance and conformance data from external and internal audits.

(7) *Installation Status Report, Natural Infrastructure.* The ISR-NI collects and reports on the readiness of Army installations. The information is collected annually based upon 18 media within the Army Environmental Program (AEP).

(8) *Toxic release inventory (TRI).* Installations meeting established threshold criteria are to submit an annual TRI report as required by the *Emergency Planning and Community Right-to-Know Act* (EPCRA) and Executive Order (EO) 13423.

(9) *Solid Waste Annual Reporting-Web (SWARWeb) System.* SWARWeb is a web-based system to support integrated solid waste management at the installation level. It allows the tracking of solid waste and construction and deconstruction debris waste generation and costs as well as waste diversion through recycling and reuse.

(10) *Hazardous Substance Management System (HSMS).* HSMS is an installation centric client-server software

system to support the integrated management of hazardous materials. It is capable of tracking the authorized ordering, issue and return of hazardous material as well as the disposal of hazardous waste (HW).

16-4. Reporting violations

a. Installation Commanders will enter enforcement actions (ENF) using official electronic Army Environmental Quality Reporting System ((for example, Army Environmental Data Base - Environmental Quality (AEDB-EQ)) reporting mechanisms with verification/confirmation through proper Command channels (for example, ACCS, DRUs, MSCs, regional offices, ACOMS) to the AEC. Initial reports for ENFs must be reported in accordance with current Army environmental quality reporting policy requirements as published and updated by the HQDA. Initial reports will be entered via the Army Environmental Quality Reporting System within 48 hours (2 business days) for any ENF involving:

- (1) Criminal enforcement;
- (2) A fine, penalty, fee, or tax;
- (3) Installation-wide (show stopper or major mission restriction), Army-wide, or DOD-wide impact, media attention, or community (on/off post) impact; or,
- (4) Third party fault (that is, a non-Army entity is responsible in whole or part for the alleged violation(s)).

b. All other ENFs will be reported/entered into the AEDB-EQ within 7 business days through proper Command channels.

c. The aforementioned 48 hours (2 business days) reporting includes notification to HQDA (DAIM-ED (ODEP) & JALS-ELD (Army Legal Office) through proper Command channels. Additionally, coordinate with JALS-ELD (Army Legal Office) in writing, through technical legal channels, regarding litigation, administrative proceedings, and settlement negotiations.

16-5. Nonconformance and corrective and preventive action

a. All Army facilities identified by HQDA for environmental management system (EMS) implementation will accomplish the following in accordance with the ISO 14001 standard:

(1) Establish and maintain procedures for defining responsibility and authority for handling and investigating nonconformance with the facility's EMS requirements and procedures.

(2) Implement and record any changes in the documented procedures resulting from corrective and preventive action.

b. Any corrective or preventive action taken to eliminate the causes of actual or potential nonconformance will be appropriate to the magnitude of problems and commensurate with the environmental impact encountered, if any.

16-6. Environmental records

a. General.

(1) IMCOM, NGB-ARNG, ACOMs, ASCCs, DRUs, installations, and tenants will establish and maintain procedures for identification, maintenance, and disposition of environmental records, to include training records and the results of audits and reviews.

(2) Environmental records will be legible, identifiable and traceable to the activity, product, or service involved, and will contain the name and office symbol of the point of contact for that record.

(3) Environmental records will be stored and maintained (in hard copy or electronic format) in such a way that they are readily retrievable and protected against damage, deterioration, or loss.

b. *Recordkeeping guidelines.* Environmental records will be maintained, as appropriate, to demonstrate conformance to ISO 14001, and requirements set forth in AR 25-400-2.

c. *Environmental cleanup documents.* All installations and facilities will provide copies of environmental cleanup documents to the electronic permanent repository at USAEC. Environmental cleanup documents that should be submitted are detailed in the Army Environmental Cleanup Program Permanent Document Repository Guidance, which was issued 29 Sep 2004. Copies of the guidance are available from the USAEC Cleanup Division.

Chapter 17 Management Review

17-1. Environmental Management System management reviews

a. Installations will establish written procedures for conducting recurring management reviews of their environmental management system (EMS).

b. At least annually, Garrison commanders (in conjunction with the Environmental Quality Control Committee (EQCC) or equivalent) of all appropriate facilities will conduct a management review of their respective environmental management system (EMS) to ensure its continuing suitability, adequacy, and effectiveness.

c. The management review process will ensure that the necessary information is collected to allow management to carry out this evaluation.

d. The management review, which will be documented, will address the possible need for changes to policy, objectives, and other elements of the EMS in light of EMS audit results, changing circumstances, and the commitment to continual improvement.

17–2. Headquarters, Department of the Army environmental program reviews

HQDA will conduct periodic program reviews to ensure adequate oversight, program effectiveness, and proper resource allocation and execution.

Appendix A

References

DOD Directives are available at www.dtic.mil/whs/directives. United States Codes (USC) are available at www.gpoaccess.gov/uscode/. Executive Orders are available at www.archives.gov/federal_register/executive_orders/disposition-tables.html. Code of Federal Regulations (CFR) are available at www.gpoaccess.gov/cfr/index.html.

Section I

Required Publications

AR 11-2

Management Control. (Cited in para 1-4.)

AR 25-400-2

Army Records Information Management System (ARIMS). (Cited in para 16-6.)

AR 40-5

Preventive Medicine. (Cited in paras 1-25, 4-2, 5-2, 9-2.)

AR 50-6

Chemical Surety. (Cited in para 11-2.)

AR 70-1

Army Acquisition Policy. (Cited in paras 7-2 , 7-4.)

AR 75-15

Policy for Explosive Ordnance Disposal (O). (Cited in para 11-4.)

AR 95-1

Flight Regulations. (Cited in para 14-2.)

AR 210-20

Real Property Master Planning for Army Installations. (Cited in paras 14-2, 15-6.)

AR 210-50

Housing Management. (Cited in para 5-2.)

AR 350-19

The Army Sustainable Range Program. (Cited in para 14-2.)

AR 385-10

The Army Safety Program. (Cited in para 5-2.)

AR 405-10

Acquisition of Real Property and Interests Therein. (Cited in para 15-5.)

AR 405-80

Management of Title and Granting Use of Real Property. (Cited in paras 4-3, 15-5.)

AR 405-90

Disposal of Real Estate. (Cited in paras 4-3, 15-5.)

AR 415-15

Army Military Construction and Nonappropriated Fund Construction Program Development and Execution. (Cited in paras 10-2, 15-6.)

AR 420-10

Management of Installation Directorates of Public Works. (Cited in para 5-2.)

AR 420-49

Utility Services. (Cited in paras 4-2, 10-2.)

AR 420-70

Buildings and Structures. (Cited in para 9-2.)

AR 700-136

Tactical Land-Based Water Resources Management. (Cited in para 4-2.)

AR 710-2

Supply Policy Below the National Level. (Cited in paras 1-10, 10-1.)

U.S. Army EMS Aspects and Impact Methodology for Army Training Ranges

Implementation Guidance. (Cited in para 1-1.) (Available at www.sustainability.army.mil.)

U.S. Army EMS Commanders Guide

Implementation Guidance. (Cited in para 1-1.) (Available at www.sustainability.army.mil.)

U.S. Army EMS Implementer's Guide

Implementation Guidance. (Cited in para 1-1.) (Available at www.sustainability.army.mil.)

Army Strategy for the Environment

Brochure, 1 Nov 04. (Cited in para 2-1.) (Available at www.asaie.army.mil.)

ASTM D6008-96 (2005)

Standard Practice for Conducting Environmental Baseline Surveys. (Cited in para 15-6.) (Available for ordering at www.webstore.ansi.org.)

ASTM E1527-00

Standard Practice Environmental Site Assessments: Phase I Environment Site Assessment Process. (Cited in para 15-6.) (Available for ordering at www.webstore.ansi.org.)

ASTM E1903-97 (2002)

Standard Guide for Environmental Site Assessments: Phase II Environment Site Assessment Process. (Cited in para 15-6.) (Available for ordering at www.webstore.ansi.org.)

DA PAM 40-11

Preventive Medicine. (Cited in para 10-2.)

DA PAM 415-15

Army Military Construction Program Development and Execution. (Cited in para 15-6.)

DFAS-IN Manual 37-100-*

Financial Management - The Army Management Structure FY04. (Cited in para 4-3.) (Available at www.asafm.army.mil.)

DOD American Indian and Alaska Native Policy Memorandum

Policy Document, 20 Oct 1998. (Cited in para 6-2.) (Available at www.denix.osd.mil.)

DOD Management Guidance for the Defense Environmental Restoration Program (DERP)

Guidance Document, September 2001. (Cited in para 12-2.) (Available at www.denix.osd.mil.)

DOD 4150.7-M

DOD Pest Management Training and Certification. (Cited in paras 5-2, 5-4.)

DOD 4150.7-P

DOD Plan for the Certification of Pesticide Applicators. (Cited in paras 5-2, 5-4.)

DOD 4160.21-M

Defense Material Disposition Manual. (Cited in para 10-1.)

DOD 4500.9-R

Defense Transportation Regulation. (Cited in para 10-1.)

DOD 4715.5-G

Overseas Environmental Baseline Guidance Document. (Cited in para 15-8.)

DOD 7000.14-R

DOD Financial Management Regulation (FMRS). (Cited in para 12-2.)

DODD 4715.1

Environmental Security. (Cited in para 4-3.)

DODD 4715.11

Environmental and Explosives Safety Management on Operational Ranges Within the United States. (Cited in paras 8-2, 12-4.)

DODD 4715.12

Environmental and Explosives Safety Management on Operational Ranges Outside the United States. (Cited in para 8-2.)

DODD 5000.1

The Defense Acquisition System. (Cited in paras 1-7, 3-3.)

DODI 4150.7

DOD Pest Management Program. (Cited in paras 4-3, 5-2, 5-4.)

DODI 4715.3

Environmental Conservation Program. (Cited in para 4-3.)

DODI 4715.4

Pollution Prevention, Jun 1996. (Cited in para 7-2.)

DODI 4715.5

Management of Environmental Compliance at Overseas Installations. (Cited in paras 4-3, 5-2, 15-8, 16-1.)

DODI 4715.7

Environmental Restoration Program. (Cited in para 12-2.)

DODI 4715.8

Environmental Remediation for DOD Activities Overseas. (Cited in paras 12-2, 12-4, 15-8.)

EO 11988

Floodplain Management, 42 FR 26951 (Cited in para 4-2.)

EO 11990

Protection of Wetlands. (Cited in paras 4-2, 4-3.)

EO 12580

Superfund Implementation, 52 FR 2923. (Cited in paras 12-2, 12-4.)

EO 13007

Indian Sacred Sites, 61 FR 26771. (Cited in para 6-4.)

EO 13112

Invasive Species (Cited in para 4-3.)

EO 13175

Consultation and Coordination with Indian Tribal Governments, 65 FR 67249. (Cited in paras 6-2, 6-4.)

EO 13186

Responsibilities of Federal Agencies to Protect Migratory Birds, 66 FR 3853. (Cited in para 4-3.)

EO 13287

Preserve America. (Cited in paras 1–5, 6–2, 6–4.)

EO 13423

Strengthening Federal Environmental, Energy, and Transportation Management. (Cited in paras 4–3, 7–2, 7–4, 9–1, 10–2, 16–3, B–2.)

ER 200–3–1

Formerly Used Defense Sites Program Policy. (Cited in paras 12–2, 12–4.)

Field Manual (FM) 3–100.4

Environmental Considerations in Military Operations. (Cited in para 1–28.)

ISO 14001 (also known as ANSI/ISO 14001–2004)

Environmental Management System Requirements - Specifications with Guidance for Use (Cited in paras 1–1, 1–13, 1–24, 15–9, 16–1, 16–5, 16–6.) (Available for ordering at www.webstore.ansi.org.)

Memorandum, DUSD (I&E), 10 October 2002

Implementation of Sikes Act Improvement Act: Updated Guidance. (Cited in para 4–3.) (Available at www.aec.army.mil/usaec/natural.)

PL 108–136

National Defense Authorization Act FY04. (Cited in para 4–3.)

PL 109–58

Energy Policy Act of 2005 (Cited in paras 4–2, 11–2.)

TB MED 575

Swimming Pools and Bathing Facilities. (Cited in para 4–2.)

TB MED 576

Occupational and Environmental Health: Sanitary Control and Surveillance of Water Supplies at Fixed Installations. (Cited in para 4–2.)

TB MED 577

Occupational and Environmental Health: Sanitary Control and Surveillance of Field Water Supplies. (Cited in para 4–2.)

TB 55–1900–206–14

Control and Abatement of Pollution by Army Watercraft. (Cited in para 4–2.)

TM 5–662

Swimming Pool Operation and Maintenance. (Cited in para 4–2.)

TM 5–813–1

Water Supply: Sources and General Considerations. (Cited in para 4–2.) (Available at www.usace.army.mil.)

TM 5–813–3

Water Supply: Water Treatment. (Cited in para 4–2.) (Available at www.usace.army.mil.)

TM 5–813–4

Water Supply: Water Storage. (Cited in para 4–2.) (Available at www.usace.army.mil.)

TM 5–813–5

Water Supply: Water Distribution. (Cited in para 4–2.) (Available at www.usace.army.mil.)

TM 5–813–7

Water Supply: Special Projects, Volume 7. (Cited in para 4–2.) (Available at www.usace.army.mil.)

TM 5-813-8

Water Supply: Water Desalination. (Cited in para 4-2.) (Available at www.usace.army.mil.)

TM 5-813-9

Water Supply: Pumping Stations. (Cited in para 4-2.) (Available at www.usace.army.mil.)

UFC 3-230-02

Unified Facilities Criteria - Operation and Maintenance: Water Supply Systems. (Cited in para 4-2.) (Available at wbdg.org.ccb/.)

USACHPPM TG-179

Guide for Providing Safe Drinking Water at Army Installations. (Cited in para 4-2.) (Available at chppm-www.apgea.army.mil.)

5 USC 552

Freedom of Information Act, as amended (FOIA) (Cited in paras 1-8, 16-1.)

7 USC 136, et seq.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended. (Cited in para 5-2.)

10 USC 2665

Sale of Certain Interest in Lands; Logs. (Cited in paras 1-24, 1-27, 4-3.)

10 USC 2667

Leases: Non-excess Property of Military Departments. (Cited in paras 1-24, 1-27, 4-3.)

10 USC 2671

Military Reservations and Facilities, Hunting, Fishing, and Trapping. (Cited in para 4-3.)

10 USC 2684a

Agreements to Limit Encroachment and other Constraints on Military Training, Testing, and Operations. (Cited in para 4-3.)

10 USC 2688

Utility Systems: Conveyance Authority. (Cited in para 15-5.)

10 USC 2694a

Conveyance of Surplus Real Property for natural resource conservation. (Cited in para 4-3.)

10 USC 2701, et seq.

Defense Environmental Restoration Program (DERP). (Cited in paras 12-2, 12-4.)

15 USC 2601, et seq.

Toxic Substances Control Act (TSCA), as amended. (Cited in paras 9-2, 11-2.)

15 USC 2651, et seq.

Asbestos Hazard Emergency Response Act (AHERA). (Cited in para 9-2.)

16 USC 31

Marine Mammal Protection Act. (Cited in para 4-3.)

16 USC 35

Endangered Species Act of 1973 (ESA). (Cited in paras 4-2, 4-3, 15-8.)

16 USC 431

Antiquities Act of 1906. (Cited in para 6-2.)

16 USC 432

Permits to examine ruins, excavations, and gathering of objects; regulations. (Cited in para 6-2.)

16 USC 433

American antiquities. (Cited in para 6–2.)

16 USC 469

Archeological and Historic Preservation Act of 1974 (AHPA), as amended. (Cited in paras 6–2, 6–4.)

16 USC 470

National Historic Preservation Act of 1966 (NHPA), as amended. (Cited in paras 1–5, 6–2, 6–4.)

16 USC 620–620j

Forest Resources Conservation and Shortage Relief Act of 1990. (Cited in para 4–3.) (Available at www.fws.gov/laws/.)

16 USC 661–667e

Fish and Wildlife Coordination Act. (Cited in para 4–3.) (Available at www.fws.gov/laws/.)

16 USC 670a–670b

Sikes Act. (Cited in paras 1–24, 4–3.) (Available at www.fws.gov/laws/.)

16 USC 670a

Program for Conservation and Rehabilitation of Natural Resources on Military Installations. (Cited in para 4–3.)

16 USC 670b

Migratory Game Birds; Permits; Fees; Stamp Act and State Law Requirements (Sikes Act). (Cited in paras 1–24, 1–27.)

16 USC 670e

Applicability to Other Laws; National Forest Lands. (Cited in para 1–24.)

16 USC 701

Games and wild birds; preservation. (Cited in para 4–3.)

16 USC 703–712

Migratory Bird Treaty Act (MBTA). (Cited in para 4–3.)

16 USC 1801–1882

Magnuson Fishery Conservation and Management Act. (Cited in para 4–3.)

16 USC 3371–3378

Lacey Act (Cited in para 4–3.)

16 USC 4701–4751

Aquatic Nuisance Prevention and Control. (Cited in para 4–3.)

25 USC 32

Native American Graves Protection and Repatriation Act of 1990 (NAGPRA). (Cited in paras 1–24, 6–2, 6–4.)

29 CFR 1910.120

Occupational Safety and Health Standards, Hazardous Waste Operations and Emergency Response. (Cited in para 12–2.)

29 CFR 1910.1001

Occupational Safety and Health Standards, Asbestos. (Cited in para 9–2.)

29 CFR 1910.1025

Occupational Safety and Health Standards, Lead. (Cited in para 9–2.)

29 CFR 1910.1200

Occupational Safety and Health Standards, Hazard Communication. (Cited in para 9–2.)

29 CFR 1926.1101

Safety and Health Regulations for Constructions. (Cited in para 9–2.)

29 CFR 1926.62

Safety and Health Regulations for Construction, Lead. (Cited in para 9–2.)

32 CFR 190

Office of the Secretary of Defense (OSD), Natural Resources Management Program. (Cited in para 4–3.)

32 CFR 651

Environmental Analysis of Army Actions. (Cited in paras 1–1, 15–5.)

33 USC 26

Clean Water Act (CWA). (Cited in paras 4–2, 8–2, 9–1, 11–2, 11–4.)

33 USC 1401

Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), as amended (Ocean Dumping). (Cited in para 4–2.)

33 USC 2702 to 2761

Oil Pollution Act of 1990 (OPA). (Cited in para 3–14.)

42 USC 300f

Safe Drinking Water Act (SDWA), as amended. (Cited in paras 4–2, 8–2, 12–2.)

42 USC 1996

American Indian Religious Freedom Act of 1978 (AIRFA). (Cited in paras 6–2, 6–4.)

42 USC 4321–4347

National Environmental Policy Act of 1969, as amended (NEPA). (Cited in paras 1–1, 4–2, 4–3, B–4.)

42 USC 6901

Resource Conservation and Recovery Act (RCRA), as amended. (Cited in paras 1–25, 4–1, 4–2, 7–2, 8–2, 8–4, 10–1, 10–2, 11–2, 12–2.)

42 USC 4901

Noise Control Act of 1972. (Cited in para 14–2.)

42 USC 6901–6992k

Hazardous and Solid Waste Amendments of 1984 (HSWA). (Cited in para 7–2.)

42 USC 6941–6949a

Subtitle D, the Resource Conservation and Recovery Act (RCRA). (Cited in para 10–2.)

42 USC 6961

Federal Facility Compliance Act of 1992. (Cited in paras 4–2, 10–1.)

42 USC 7401

Clean Air Act, as amended (CAA). (Cited in paras 4–1, 8–2, 9–2, 11–2.)

42 USC 9601

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA). (Cited in paras 4–2, 8–1, 11–2, 12–2, 12–4, 15–5.)

42 USC 11011

Emergency Planning and Community Right-to-Know Act (EPCRA). (Cited in paras 7–5, 9–1, 11–2.)

42 USC 13101–13102

Pollution Prevention Act of 1990 (PPA). (Cited in paras 7–2, 11–2.)

36 CFR 79

Curation of Federally-Owned and -Administered Archeological Collections. (Cited in paras 6–2, 6–4.)

36 CFR 800

Protection of Historic Properties. (Cited in paras 6–2, 6–4, 15–5.)

40 CFR 61

National Emission Standards for Hazardous Air Pollutants (NESHAP). (Cited in paras 4–1, 9–2.)

40 CFR 112

Oil Pollution Prevention. (Cited in paras 11–2, 11–4.)

40 CFR 260–279

Hazardous Waste. (Cited in para 10–1.)

40 CFR 261

Identification and Listing of Hazardous Waste. (Cited in para 10–2.)

40 CFR 266.200–206

EPA’s Military Munitions Rule. (Cited in para 8–2.)

40 CFR 280

Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks. (Cited in para 11–2.)

40 CFR 281

Approval of State Underground Storage Tank Programs. (Cited in para 11–2.)

40 CFR 300

National Oil and Hazardous Substances Pollution Contingency Plan. (Cited in paras 11–2, 11–4, 12–2.)

40 CFR 302

Designation, Reportable Quantities, and Notification. (Cited in para 11–4.)

40 CFR 403

General Pretreatment Regulations for Existing and New Sources of Pollution. (Cited in para 4–2.)

40 CFR 745

Lead-based Paint Poisoning Prevention in Certain Residential Structures. (Cited in para 9–2.)

43 CFR 5

Making Pictures, Television Productions or Sound Tracks on Certain Areas Under the Jurisdiction of the Department of the Interior (Cited in para 6–4.)

43 CFR 6

Patent Regulations - Table of Contents (Cited in para 6–4.)

43 CFR 7

Protection of Archeological Resources (Cited in para 6–4.)

43 CFR 10

Native American Graves Protection and Repatriation Regulations. (Cited in paras 6–2, 6–4.)

43 CFR 10.3

Native American Graves Protection and Repatriation Regulations - International Archeological Excavations. (Cited in para 6–4.)

43 CFR 10.5

Native American Graves Protection and Repatriation Regulations - Consultation. (Cited in para 6–4.)

49 USC 1801

Federal Hazardous Materials Transportation Law. (Cited in para 9–2.)

50 CFR 10–16

Taking, Possession, Transportation, Sale, Purchase, and Barter, Exportation and Importation of Wildlife and Plants. (Cited in para 4–3.)

50 CFR 13

US Fish and Wildlife Service (USFWS) General Permit Procedures (Cited in para 4–3.)

50 CFR 21

and Migratory Bird Permits. (Cited in para 4–3.)

50 CFR 402

Endangered Species Act of 1973, as amended. (Cited in para 4–3.)

57 FR 28835

DOD - Office of the Secretary of Defense Environmental Restoration Program. (Cited in para 12–4.)

Section II**Related Publications**

A related publication is a source of additional information. The user does not have to read it to understand this regulation. DOD Directives are available at www.dtic.mil/whs/directives. United States Codes (USC) are available at www.gpoaccess.gov/uscode/. Executive Orders are available at www.archives.gov/federal_register/executive_orders/disposition_tables.html. Code of Federal Regulations (CFR) are available at www.gpoaccess.gov/cfr/index.html. Public laws are available at <http://thomas.loc.gov/bss/>. EPA publications are available at <http://www.epa.gov/epahome/publications.htm>. Military standards are available at <http://assist.daps.dla.mil/quicksearch/>.

AR 1–1

Planning, Programming, Budgeting, and Execution System

AR 5–4

Department of the Army Productivity Improvement Program.

AR 5–20

Competitive Sourcing Program

AR 10–87

Major Army Commands in the Continental United States

AR 11–9

Army Radiation Safety Program

AR 11–27

Army Energy Program

AR 25–55

The Department of the Army Freedom of Information Act Program

AR 37–49

Budgeting, Funding, and Reimbursement for Base Operations Support of Army Activities

AR 40–7

Use of Investigational Drugs and Devices in Humans and the Use of Schedule I Controlled Drug Substances

AR 40–13

Medical Support-Nuclear/Chemical Accidents and Incidents

AR 50–5

Nuclear Surety

AR 50-7

Army Reactor Program

AR 56-9

Watercraft

AR 70-65

Management of Controlled Substances, Ethyl Alcohol and Hazardous Biological Substances in Army Research, Development, Test, and Evaluation Facilities

AR 75-1

Malfunctions Involving Ammunition and Explosives

AR 75-14

Interservice Responsibilities for Explosive Ordnance Disposal

AR 350-1

Army Training and Leader Development

AR 360-1

The Army Public Affairs Program

AR 385-16

System Safety Engineering and Management

AR 385-40

Accident Reporting and Records

AR 385-64

US Army Explosives Safety Program

AR 420-90

Fire and Emergency Services.

AR 700-141

Hazardous Materials Information Resource System (RCS DDFM&P (A,Q,&AR)1486)

AR 725-50

Requisitioning, Receipt, and Issue System

AR 750-1

Army Material Maintenance Policy

DA PAM 40-8

Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Nerve Agents GA, GB, GD, AND VX

DA PAM 40-501

Hearing Conservation Program

DA PAM 200-1

Environmental Protection and Enhancement

DASA (ESOH) Directive, 13 Jul 01

HQDA Memorandum, Army Environmental Management System - Action Memorandum.

DODD 3200.15

Sustainment of Ranges and Operating Areas (OPAREAs)

DODI 4000.19

Interservice and Intragovernmental Support

DODI 4715.10

Environmental Education, Training and Career Development

DODI 6055.6

DOD Fire and Emergency Services (F&ES) Program

EM 385-1-1

Safety and Health Requirements (Available at www.usace.army.mil/publications/)

EO 11514

Protection and Enhancement of Environmental Quality

EO 11644

Use of Off-Road Vehicles in the Public Lands

EO 12114

Environmental Effects Abroad of Major Federal Actions

EO 12759

Federal Energy Management

EO 12844

Federal Use of Alternately Fueled Vehicles

EP 1130-2-540

Environmental Stewardship Operations and Maintenance Guidance and Procedures (Available at www.usace.army.mil/publications/)

EPA-340/1-90-018

Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance

EPA-560/5-85-024

Guidance for Controlling Asbestos-Containing Materials in Buildings

EPA-600/4-85-049

Measuring Airborne Asbestos Following an Abatement Action

EPA-600/9-79-045

National Pollutant Discharge Elimination System (NPDES) Best Management Practices Guidance Document

EPA-560-OPTS-86-001

A Guide to Respiratory Protection for the Asbestos Abatement Industry

ER 200-3-1

FUDS Program Policy

FM 5-19

Composite Risk Management

JP Publication 4-04

Joint Doctrine for Civil Engineering Support

MIL-STD-3007

Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications (Available at <http://assist.daps.dla.mil/quicksearch.>)

MIL-STD-129P

Military Marking for Shipment and Storage

MIL-STD-1474D

Department of Defense Design Criteria Standard, Noise Limits

NFPA 295

Standard for Wildlife Control. (Available for ordering at www.webstore.ansi.org.)

NFPA 299

Standard for Protection of Life and Property from Wildfire (Available for ordering at www.webstore.ansi.org.)

NFPA 1051

Standard for Wildland Fire Fighter Professional Qualifications (Available for ordering at www.webstore.ansi.org.)

OMB Circular A-95

Evaluation, Review, and Coordination of Federal and Federally Assisted Programs and Projects. (Available for ordering at the Office of Management and Budget's information line.)

PL 99-145, section 1412

National Defense Authorization Act of 1986 - Destruction of Existing Stockpile of Lethal Chemical Weapons

PL 101-576

Chief Financial Officers Act of 1990.

PL 101-637

Asbestos School Hazard Abatement Reauthorization Act

PL 102-484

National Defense Authorization Act for FY93

PL 102-550

Residential Lead Based Paint Hazard Reduction Act 1992

PL 105-85

National Defense Authorization Act for FY98

PL 106-065

National Defense Authorization Act for FY00

PL 107-188

Public Health Security and Bioterrorism Preparedness and Response Act of 2002; Title IV-Drinking Water Security and Safety

PMS 310-1/NFES 1414

National Wildfire Coordinating Group Wildland Fire and Prescribed Fire Qualification System Guide, Jan 2000

SB 8-75 – medcase

Army Medical Department Supply Information

TB MED 513

Guidelines for the Evaluation and Control of Asbestos Exposure

TC 25-1

Training Land

TM 3-250

Storage, Shipment, Handling and Disposal of Chemical Agents and Hazardous Chemicals

TM 3-261

Handling and Disposal of Unwanted Radioactive Material

TM 5-629

Weed Control and Plant Growth Regulation

TM 5-630

Natural Resources - Land Management

TM 5-632

Military Entomology Operational Handbook

TM 5-633

Natural Resources - Fish and Wildlife Management

TM 5-635

Natural Resources - Outdoor Recreation and Cultural Values

TM 5-814-5

Sanitary Landfills

TM 38-250

Preparing Hazardous Materials for Military Air Shipment

TM 38-410

Storage and Handling of Hazardous Materials

USACHPPM TG No. 135

Data Base for Assessing the Annoyance of the Noise of Small Arms (Available at chppm-www.apgea.army.mil.)

USACHPPM TG No. 177

Commander's Guide to Regulated Medical Waste Management at Army Medical Treatment Facilities (Available at chppm-www.apgea.army.mil.)

USACHPPM TG No. 197

Guide for Developing an Integrated Solid Waste Management Plans at Army Installations (Available at chppm-www.apgea.army.mil.)

USACHPPM TG No. 198

Childhood Lead Poisoning Prevention/Lead-Based Paint Management Program on DOD Installations (Available at chppm-www.apgea.army.mil.)

10 CFR 20

Nuclear Regulatory Commission - Standards for Protection Against Radiation

14 CFR 150

Federal Aviation Administration, Department of Transportation - Airport Noise Compatibility Planning

24 CFR 51

Office of the Secretary, Department of Housing and Urban Development - Environmental Criteria and Standards

29 CFR 1910.120e, p, q

Occupational Safety and Health Administration (OSHA), Department of Labor (DOL) - Occupational Safety Health Standards - Hazardous Waste Operations and Emergency Response.

29 CFR 1926

Occupational Safety and Health Administration (OSHA), Department of Labor (DOL) - Safety and Health Regulations for Construction

32 CFR 229

Office of the Secretary of Defense - Protection of Archeological Resources: Uniform Regulations

32 CFR 651.18

Department of the Army - Environmental Analysis of Army Actions - Introduction.

33 CFR 153

Coast Guard (CG), Department of Homeland Security (DHS) - Control of Pollution by Oil and Hazardous Substances, Discharge Removal

33 CFR 154

CG, DHS - Facilities Transferring Oil or Hazardous Material in Bulk

33 CFR 159

CG, DHS - Marine Sanitation Devices

33 CFR 209

Corps of Engineers, Department of the Army, DOD - Administrative Procedure

33 CFR 320

Corps of Engineers, Department of the Army, DOD - General Regulatory Policies

36 CFR 60

National Park Service (NPS), Department of the Interior (DOI) - National Register of Historic Places

36 CFR 61

NPS, DOI - Procedures for State, Tribal, and Local Government Historic Preservation Programs

36 CFR 63

NPS, DOI - Determinations of Eligibility for Inclusion in the National Register of Historic Places

40 CFR 51

EPA - Requirements for the Preparation, Adoption, and Submittal of Implementation Plans

40 CFR 51.1

EPA - Requirements for the Preparation, Adoption, and Submittal of Implementation Plans - Who is Responsible for Actions Described in this Subpart?

40 CFR 51.307

EPA - Requirements for the Preparation, Adoption, and Submittal of Implementation Plans - New Source Review

40 CFR 63

EPA - National Emission Standards for Hazardous Air Pollutants for Source Categories.

40 CFR 68

EPA - Chemical Accident Prevention Provision

40 CFR 70

EPA - State Operating Permit Programs.

40 CFR 70.6

EPA - State Operating Permit Programs - Permit Content.

40 CFR 71

EPA - Federal Operating Permit Programs.

40 CFR 71.1

EPA - Federal Operating Permit Programs - Program Overview.

40 CFR 71.6

EPA - Federal Operating Permit Programs - Permit Content.

40 CFR 82

EPA - Protection of Stratospheric Ozone

40 CFR 112.3

EPA - Oil Pollution Prevention - Requirement to Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan

40 CFR 112.4

EPA - Oil Pollution Prevention - Amendment of Spill Prevention, Control, and Countermeasure Plan by Regional Administrator.

40 CFR 112.5

EPA - Oil Pollution Prevention - Amendment of Spill Prevention, Control, and Countermeasure Plan by Owners or Operators.

40 CFR 112.7

EPA - Oil Pollution Prevention - General Requirements for Spill Prevention, Control, and Countermeasure Plans

40 CFR 112.8

EPA - Oil Pollution Prevention - Spill Prevention, Control, and Countermeasure Plan Requirements for Onshore Facilities (excluding production facilities).

40 CFR 112.20

EPA - Oil Pollution Prevention - Facility Response Plans.

40 CFR 112.21

EPA - Oil Pollution Prevention - Facility Response Training and Drills/Exercises.

40 CFR 122

EPA - EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES).

40 CFR 122.26

EPA - EPA Administered Permit Programs - The National Pollutant Discharge Elimination System (NPDES) - Storm Water Discharges

40 CFR 123

EPA - State Program Requirements

40 CFR 125

EPA - Criteria and Standards for the National Pollutant Discharge Elimination System (NPDES)

40 CFR 130.12

EPA - Water Quality Planning and Management - Coordination with Other Programs

40 CFR 136

EPA - Guidelines Establishing Test Procedures for the Analysis of Pollutants

40 CFR 140

EPA - Marine Sanitation Device Standard.

40 CFR 141

EPA - National Primary Drinking Water Regulations

40 CFR 141.28

EPA - National Primary Drinking Water Regulations - Certified Laboratories

40 CFR 142

EPA - National Primary Drinking Water Regulations Implementation

40 CFR 143

EPA - National Secondary Drinking Water Regulations

40 CFR 144

EPA - Underground Injection Control Program.

40 CFR 146

EPA - Underground Injection Control Program: Criteria and Standards

40 CFR 147

EPA - State Underground Injection Control Programs

40 CFR 148

EPA - Hazardous Waste Injection Restrictions

40 CFR 149

EPA - Sole Source Aquifers.

40 CFR 202

EPA - Motor Carriers Engaged in Interstate Commerce

40 CFR 204

EPA - EPA Noise Emission Standards for Construction Equipment

40 CFR 205

EPA - Transportation Equipment Noise Emission Controls

40 CFR 225

EPA - Dredged Material Permits

40 CFR 230

EPA - Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material.

40 CFR 239

EPA - Requirements for State Permit Program Determination of Adequacy

40 CFR 240

EPA - Guidelines for the Thermal Processing of Solid Wastes

40 CFR 243

EPA - Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste

40 CFR 246

EPA - Source Separation for Materials Recovery Guidelines

40 CFR 247

EPA - Comprehensive Procurement Guideline for Products Containing Recovered Materials.

40 CFR 257

EPA - Criteria for Classification of Solid Waste Disposal Facilities and Practices.

40 CFR 258

EPA - Criteria for Municipal Solid Waste Landfills.

40 CFR 262

EPA - Standards Applicable to Generators of Hazardous Waste

40 CFR 262.11

EPA - Standards Applicable to Generators of Hazardous Waste - Hazardous Waste Determination.

40 CFR 264.13

EPA - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities - General Waste Analysis.

40 CFR 264

EPA - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 265

EPA - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 273

EPA - Standards for Universal Waste Management

40 CFR 280

EPA - Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

40 CFR 280.20

EPA - Technical Standards and Corrective Action Requirements for Owners and Operators of USTs - Performance Standards for New Underground Storage Tank Systems

40 CFR 280.43

EPA - Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks - Methods of Release Detection for Tanks

40 CFR 300.120

EPA - National Oil and Hazardous Substance Pollution Contingency Plan - On-scene Coordinators and Remedial Project Managers: General Responsibilities

40 CFR 300.125

EPA - National Oil and Hazardous Substance Pollution Contingency Plan - Notification and Communications

40 CFR 300.155

EPA - National Oil and Hazardous Substance Pollution Contingency Plan - Public Information and Community Relations

40 CFR 300.211

EPA - National Oil and Hazardous Substance Pollution Contingency Plan - Facility and Vessel Response Plans

40 CFR 300.425

EPA - National Oil and Hazardous Substance Pollution Contingency Plan - Establishing Remedial Priorities

40 CFR 372

EPA - Toxic Chemical Release Reporting: Community Right-to-Know

40 CFR 503

EPA - Standards for the Use or Disposal of Sewage Sludge

40 CFR 761

EPA - Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

40 CFR 761.20

EPA - Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions - Prohibitions and Exceptions.

40 CFR 761.60b

EPA - Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions - Disposal Requirements.

40 CFR 761.202

EPA - Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions - EPA Identification Numbers.

40 CFR 761.205

EPA - Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions - Notification of PCB Waste Activity (EPA Form 7710-53)

40 CFR 763

EPA - Asbestos

40 CFR 763.87

EPA - Asbestos - Analysis

43 CFR 5

Subtitle A - Office of the Secretary of the Interior - Making Pictures, Television Productions or Sound Tracks on Certain Areas Under the Jurisdiction of the Department of the Interior

43 CFR 6

Subtitle A - Office of the Secretary of the Interior - Patent Regulations

43 CFR 7

Subtitle A - Office of the Secretary of the Interior - Protection of Archaeological Resources

48 CFR 6

Federal Acquisition Regulations - Competition Requirements

49 CFR 106

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Rulemaking Procedures

49 CFR 130

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Oil Spill Prevention and Response Plans

49 CFR 171

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - General information, regulations, and definitions

49 CFR 172

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

49 CFR 173

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Shippers—General Requirements for Shipments and Packagings

49 CFR 174

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Carriage by Rail

49 CFR 175

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Carriage by Aircraft

49 CFR 176

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Carriage by Vessel

49 CFR 177

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Carriage by Public Highway

49 CFR 178

Pipeline and Hazardous Materials Safety Administration, Department of Transportation - Subtitle B - Other Regulations Relating to Transportation - Specifications for Packagings

50 CFR 222

National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC) - General Endangered and Threatened Marine Species

50 CFR 402.06

Endangered Species Act of 1973, as amended - Coordination with Other Environmental Reviews.

50 CFR 402.10

Endangered Species Act of 1973, as amended - Conference on Proposed Species or Proposed Critical Habitat

65 FR 62565–62572

Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, 18 Oct 2000 (Available at www.epa.gov/Fedrgstr/search/html.)

31 USC 1341

Anti-Deficiency Act

33 USC 401

Saint Lawrence Seaway Development Corporation, Department of Transportation - Seaway Regulations and Rules

42 USC 300g–8

The Public Health and Welfare - National Drinking Water Regulations

42 USC 4331

National Environmental Policy - Congressional Declaration of National Environmental Policy

42 USC 9613

Comprehensive Environmental Response, Compensation, and Liability - Civil Proceedings

42 USC 9617

Comprehensive Environmental Response, Compensation, and Liability - Public Participation

42 USC 9620

Comprehensive Environmental Response, Compensation, and Liability - Federal Facilities

42 USC 9620h

Comprehensive Environmental Response, Compensation, and Liability - Property Transferred by Federal Agencies

49 USC 5102

Transportation - Hazardous Material Transportation Act

50 USC 1521

Lethal Chemical Agents and Munitions

Section III**Prescribed Forms**

This section contains no entries.

Section IV

Referenced Forms

DA Forms are available on the Army Publishing Directorate Web site www.apd.army.mil: DD Forms are available from OSD Web site <http://www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm>.)

DA Form 11-2-R

Management Control Evaluation Certification Statement

DD Form 1391

FY_ Military Construction Project Data

Appendix B

Installation Management Control Evaluation Checklist

B-1. Function.

The function covered by this checklist is Environmental Management.

B-2. Purpose.

The purpose of this checklist is to assist installation managers and staff in evaluating the key management controls listed below. It is not intended to cover all controls. The garrison commander (GC) or designated representative(s) will perform this checklist.

B-3. Instructions.

Answers must be based on the actual testing of Key management controls (for example, document analysis, direct observation, sampling simulation, other). Answers which indicate deficiencies must be explained and corrective action indicated in supporting documentation. These management controls must be evaluated at least every five years. Certification that this evaluation has been conducted must be accomplished on DA Form 11-2-R, Management Control Evaluation Certification Statement.

B-4. Test Questions.

a. Program Performance.

(1) Does the installation have an Environmental Quality Control Committee (EQCC), formally constituted and chaired by the garrison commander (GC), which provides a forum to enhance, address and resolve environmental issues?

(2) Is a multidisciplinary program in place to identify and proactively control environmental risks?

(3) Does the installation have pollution prevention policies and programs in place and operating to reduce pollution through source reduction, reuse, recycling, or energy/water use reduction?

(4) Does the installation have the requisite plans in place required by environmental permits?

(5) Are all personnel (including appointed environmental officers) trained and equipped sufficiently to execute their duties in an environmentally safe and compliant manner and to respond properly in case of environmental emergency?

(6) Are problems that are identified through internal audits, complaints, spills or enforcement actions (ENFs) investigated to determine systemic causes and promptly corrected? (PD/LD: DASA (ESOH) directive, 13 July 2001, and EO 13423)

(7) Does the installation have an installation internal assessment plan (IIAP)? (PD/LD: DASA (ESOH) directive, 13 July 2001, and EO 13423)

(8) Is the IIAP updated annually and included in the documentation of the installation Environmental Management System (EMS)? (PD/LD: DASA (ESOH) directive, 13 July 2001, EO 13423, and AR 11-2)

b. Environmental Condition.

(1) Are all solid waste streams systematically characterized to determine if they are hazardous? Is the basis for the determination (i.e. generator knowledge or analytical results) documented and the waste disposed of properly?

(2) Are all unit projects, activities and work requests coordinated with the environmental officer?

(3) Is adequate National Environmental Policy Act (NEPA) documentation routinely prepared and considered as an integral part of the planning process (NOTE: Overseas installations should follow the Environmental Review Guide (ERG) since NEPA does not apply overseas.)?

(4) Are Environmental Performance Assessment System (EPAS) evaluations and the corrective actions in the installation corrective action plan (ICAP) completed in a timely manner?

(5) Are deficiencies identified in the ICAP that require funds forwarded to the responsible proponent for inclusion in appropriate programming and budgeting documents?

c. Mission Impact.

(1) Are management practices in place in order to improve the C-rating of mission critical environmental areas?

(2) Does top management (that is, GC, EQCC) periodically review the IIAP?

(3) Does top management review the open findings in the ICAP and ensure that adequate efforts are being made to close them?

d. Compliance.

(1) Are required reports and records complete and accurate? Is required reporting submitted to regulators in a timely and accurate manner? Is required reporting submitted to higher headquarters in a timely and accurate manner? Does the installation and the higher headquarters review and approve environmental data reported to HQDA?

(2) Are physical inspections conducted on a regular basis? Do they detect environmental problems and are they tracked to ensure corrective action? Are environmental compliance deficiencies recorded in the ICAP?

B-5. Supersession.

This checklist replaces the checklist published in AR 200-1, dated 21 February 1997.

B-6. Comments.

Help make this a better tool for evaluating management controls. Submit comments to HQDA, Director of Environmental Programs (DEP), 600 Army Pentagon, Washington, DC 20310-0600.

Glossary

Section I

Abbreviations

AAE

Army Acquisition Executive

AAFES

Army and Air Force Exchange Service

AAP

Army alternate procedures

AC

hydrogen cyanide

ACHP

Advisory Council on Historic Preservation

ACOM

Army Command

ACP

Army cost position

ACSIM

Assistant Chief of Staff for Installation Management

ACUB

Army Compatible Use Buffer

ADCON

administrative control

ADNL

A-weighted day-night level

ADUSD (E)

Assistant Deputy Undersecretary of Defense (Environment) - now ADUSD (ESOH)

ADUSD (ESOH)

Assistant Deputy Undersecretary of Defense (Environment, Safety, and Occupational Health)

AECS

Army Environmental Cleanup Strategy

AEDB

Army Environmental Data Base

AEDB-CC

Army Environmental Data Base - Compliance-Related Cleanup

AEDB-EQ

Army Environmental Data Base - Environmental Quality

AEDB-R

Army Environmental Data Base - Restoration

AEP

Army Environmental Program

AEPI

Army Environmental Policy Institute

AERO

Army Environmental Reporting Online

AERTA

Army Environmental Requirements Technology Assessment

AFH

Army Family Housing

AFJMAN

Air Force Joint Manual

AFPMB

Armed Forces Pest Management Board

AHERA

Asbestos Hazard Emergency Response Act

AHPA

Archeological and Historical Preservation Act

AIRFA

American Indian Religious Freedom Act

AKM

Army Knowledge Management

ALT

Acquisition, logistics, and technology

AMC

Army Materiel Command

AMEDD

Army Medical Department

ANSI

American National Standards Institute

APP

Affirmative Procurement Program

AR

Army regulation

ARIMS

Army Records Information Management System

ARNG

Army National Guard

AROC

Army Requirements Oversight Council

ARPA

Archeological Resources Protection Act

ARSIC

Army Range Sustainment Integration Council

ARSTAF

Army staff

ASA

Assistant Secretary of the Army

ASA (ALT)

Assistant Secretary of the Army (Acquisition, Logistics and Technology)

ASA (FM&C)

Assistant Secretary of the Army (Financial Management & Comptroller)

ASA (I&E)

Assistant Secretary of the Army (Installations and Environment)

ASARC

Army System Acquisition Review Council

ASARCCT

Army System Acquisition Review Council Coordination Team

ASC

Army senior consultant

ASCC

Army Service Component Command

ASEL

a-weighted sound exposure level

ASSON

aerial spray statement of need

AST

aboveground storage tank

ATEC

Army Test and Evaluation Command

ATSDR

Agency for Toxic Substances and Disease Registry

AWCF

Army Working Capital Fund

BCA

Base Closure Account

BCP

base realignment and closure cleanup plan

BD/DR

building demolition/debris removal

BMP

best management practice

BO

biological opinion

BOD

board of directors

BOS

base operations support

BRAC

base realignment and closure

BRAC

Base Closure and Realignment Commission

BT

Business Transformation

CA

Comprehensive Agreement

CA

Cooperative Agreement

CAA

Clean Air Act

CAIS

chemical agent identification set

CAR

Chief, Army Reserve

CBTDEV

combat developer

CC

compliance-related cleanup

CCMB

Configuration Control Management Board

CCR

Consumer Confidence Report

CEGS

Corps of Engineers guide specification

CERCLA

Comprehensive Environmental Response, Compensation, and Liability Act

CERFA

Community Environmental Response Facilitation Act

CEP

Chief of Environmental Programs

CFR

Code of Federal Regulations

CG

Carbonyl dichloride (phosgene)

CG

commanding general

CIO

Chief Information Officer

CK

cyanogen chloride

CN

w-chloroacetophenone

CONUS

continental United States

CPA

Chief of Public Affairs

CRB

Cost Review Board

CRM

cultural resources manager

CRP

community relations plan

CS

o-chlorobenzylidenemalononitrile (tear gas)

CSEL

c-weighted sound exposure level

CW

civil works

CWA

Clean Water Act

CWM

chemical warfare materiel

CWS

community water system

DA

Department of the Army

DA PAM

Department of the Army pamphlet

DARNG

Director, Army National Guard

DASA (ESOH)

Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health)

dB

decibel

DC

District of Columbia

DCS

Deputy Chief of Staff

DD

decision document

DeCA

Defense Commissary Agency

DENIX

Defense Environmental Network and Information Exchange

DEP

Director of Environmental Programs

DERP

Defense Environmental Restoration Program

DFAS

Defense Finance and Accounting Service

DHP

Defense Health Program

DLAPS

Defense Logistics Agency Publishing System

DMM

discarded military munitions

DNL

day-night level

DOD

Department of Defense

DODD

Department of Defense Directive

DODI

Department of Defense Instruction

DOI

Department of the Interior

DPTMS

Directorate of Plans, Training, Mobilization, and Security

DRMO

Defense Reutilization and Marketing Office

DRMS

Defense Reutilization and Marketing Service

DRU

Direct Reporting Unit

DSMOA

Defense and State Memoranda of Agreement

DUSD

Deputy Under Secretary of Defense

EA

executive agent or environmental assessment or enterprise architecture

ECP

Environmental Condition of Property

EIS

Environmental Impact Statement

EITM

Environmental Information Technology Management

ELD

Environmental Law Division

EL/RAMP

Environmental Legislative/Regulatory Analysis and Monitoring Program

EM

engineer manual

EMS

Environmental Management System

ENF

enforcement action

EO

executive order or environmental officer

EOD

explosive ordnance disposal

EP

engineer publication

EPA

Environmental Protection Agency

EPAR

Environmental Performance Assessment Report

EPAS

Environmental Performance Assessment System

EPCRA

Emergency Planning and Community Right-to-Know Act

EQCC

Environmental Quality Control Committee

EQIA

Environmental Quality Impact Analysis

EQLCCE

Environmental quality life cycle cost estimate

EQT

Environmental Quality Technology

ER

engineer regulation

ER, A

Environmental Restoration, Army

ER, F

Environmental Restoration, FUDS

ERDC

Engineer Research and Development Center

ERIS

Environmental Restoration Information System

ERP

Environmental Restoration Program

ESA

Endangered Species Act

ESMC

Endangered Species Management Component

ESO

Environmental Support Office

ESTCP

Environmental Security Technology Certification Program

ETTC

Environmental Technology Technical Council

FAD

Funding authorization document

FDE

Findings and Determination of Eligibility

FFCA

Federal Facilities Compliance Act

FGS

Final Governing Standards

FIFRA

Federal Insecticide, Fungicide, and Rodenticide Act

FM

field manual

FMR

financial management regulation

FOA

field operating agency

FOIA

Freedom of Information Act

FORSCOM

Forces Command

FOSET

finding of suitability for early transfer

FOSL

finding of suitability to lease

FOST

finding of suitability to transfer

FOTW

Federally-owned treatment works

FOUO

for official use only

FUDS

formerly used defense sites

FUDSMIS

Formerly Used Defense Sites Management Information System

FWPCA

Federal Water Pollution Control Act

FY

fiscal year

GC

garrison commander

GOCO

government-owned, contractor-operated

GPP

Green Procurement Program

GSA

General Services Administration

HAP

hazardous air pollutant

HDBK

Handbook

HM

hazardous material

HMMP

Hazardous Materials Management Program

HN

host nation

HPC

historic property component

HQ

Headquarters

HQDA

Headquarters, Department of the Army

HQ IMCOM

Headquarters, Installation Management Command

HSMS

Hazardous Substance Management System

HSSA

health service support area

HSWA

Hazardous and Solid Waste Amendments

HTRW

hazardous, toxic, and radioactive waste

HW

hazardous waste

IAP

installation action plan

IC

installation commander

ICAP

installation corrective action plan

ICE

independent cost estimate

ICRMP

integrated cultural resources management plan

IDN

initial distribution number

IIAP

installation internal assessment plan

II PEG

Installations Program Evaluation Group

IMCOM

Installation Management Command

INPR

inventory project report

INRMP

integrated natural resources management plan

IPM

integrated pest management

IPMC

integrated pest management coordinator

IPMP

integrated pest management plan

IPR

in-progress review

IR

installation restoration

IR

interim reference

IRP

Installation Restoration Program

ISMC

invasive species management component

ISO

International Organization for Standardization

ISR

installation status report

ISSA

Installation Services Support Agreement

IT

information technology

ITAM

Integrated Training Area Management

IWFMP

integrated wildland fire management plan

JCS

Joint Chiefs of Staff

JFLCC

Joint Forces Land Component Command

JP

joint publication

JTF

Joint Task Force

KISE

known and imminent substantial endangerment

LBP

lead-based paint

LD

legal driver

LCTA

land condition trend analysis

LEPC

Local Emergency Planning Committee

LLRW

low-level radioactive waste

LTR

letter

LUC

land use control

LUPZ

land use planning zone

MACT

maximum achievable control technology

MAIS

Major Automated Information System

MAP

management action plan

MBTA

Migratory Bird Treaty Act

MC

munitions constituents

MCA

Military Construction, Army

MCAR

Military Construction, Army Reserve

MCNG

Military Construction, National Guard

MDAP

Major Defense Acquisition Program

MEC

Munitions and explosives of concern

MEDCEN

medical center

MEDCOM

Army Medical Command

MEDDAC

medical department activity

MIDI

Military Item Disposal Instructions

MIL

military

MMRP

Military Munitions Response Program

MOA

memorandum of agreement

MOM

measure of merit

MOU

memorandum of understanding

MPRSA

Marine Protection, Research, and Sanctuaries Act

MS4

Municipal Separate Stormwater Sewer System

MSC

major subordinate command

MSWLF

municipal solid waste landfill

MTOE

modified tables of organization and equipment

MWR

morale, welfare, and recreation

NAF

non-appropriated fund

NAGPRA

Native American Graves Protection and Repatriation Act

NDAA

National Defense Authorization Act

NDCEE

National Defense Center for Environmental Excellence

NEPA

National Environmental Policy Act

NESHAP

National Emissions Standards for Hazardous Air Pollutants

NFES

National Fire Equipment System

NFPA

National Fire Protection Association

NGB

National Guard Bureau

NGB-ARNG

National Guard Bureau - Army National Guard

NGB-DARNG

National Guard Bureau - Director, Army National Guard

NHPA

National Historic Preservation Act

NLR

noise level reduction

NOAA-Fisheries

National Oceanic and Atmospheric Administration - Fisheries

NPDES

National Pollutant Discharge Elimination System

NPL

National Priorities List

NPS

National Park Service

NRC

National Response Center

NRCS

Natural Resources Conservation Service

NRHP

National Register of Historic Places

NRT

National Response Team

NTNCWS

Non-Transient Non-Community Water System

OACSIM

Office of the Assistant Chief of Staff for Installation Management

OASA (ALT)

Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

OASA (I&E)

Office of the Assistant Secretary of the Army (Installations and Environment)

OCONUS

outside the continental United States

ODEP

Office of the Director of Environmental Programs

ODS

ozone depleting substances

OEBGD

Overseas Environmental Baseline Guidance Document

OEESCM

Operational and Environmental Executive Steering Committee on Munitions

OIPT

Overarching Integration Process Team

OMB

Office of Management and Budget

OPA

Oil Pollution Act

OPLAN

operation plan

OPORD

operation order

OPTEMPO

operating tempo

OPTS

Office of Pesticides and Toxic Substances

ORV

off-road vehicle

OSC

on-scene coordinator

OSD

Office of the Secretary of Defense

OSHA

Occupational Safety and Health Act or Occupational Safety and Health Administration

OTJAG

Office of the Judge Advocate General

PA

programmatic agreement

PAA

procurement Army ammunition

PAM

pamphlet

PAO

Public Affairs Office

PCB

polychlorinated biphenyl

PD

policy decision

Pk

peak sound pressure level

PL

public Law

PLANTS

Plant List of Accepted Nomenclature, Taxonomy, and Symbols

PLS

Planning Level Survey

PMP

program management plan

PMS

Publications Management System

POL

petroleum, oil, lubricants

POM

program objective memorandum

POTW

publicly-owned treatment works

PPA

Pollution Prevention Act

PPBE

planning, programming, budgeting, and execution

PPMP

professional pest management personnel

PSD

prevention of significant deterioration

QA/QC

quality assurance/quality control

RAB

Restoration Advisory Board

RCRA

Resource Conservation and Recovery Act

RCS

Reports Control System

RDT&E

research, development, test, and evaluation

RDX

cyclotrimethylenetrinitramine

READ

Repository of Environmental Army Documents

REC

regional environmental coordinator

REO

regional environmental office

RFP

request for proposal

RMIS

Restoration Management Information System

RMP

risk management plan

RMW

regulated medical waste

ROA

reports of availability

ROD

record of decision

RPMP

real property master plan

RPTS

Reimbursable Programs Tracking System

RRC

Regional Readiness Command

RRC

Reserve Readiness Command

RRSC

Regional Readiness Support Command

RRT

Regional Response Team

RTLA

range and training land assessment

RTLP

Range and Training Lands Program

SA

Secretary of the Army

SARA

Superfund Amendments and Reauthorization Act

SB

supply bulletin

SCP

spill contingency plan

SDD

sustainable design and development

SDWA

Safe Drinking Water Act

SDWAA

Safe Drinking Water Act Amendments

SEP

supplemental environmental project

SERC

State Emergency Response Commission

SERDP

Strategic Environmental Research and Development Program

SESCC

Soil Erosion and Sediment Control Component

SHPO

State historic preservation officer

SMC

senior mission commander

SOFA

Status of Forces Agreement

SPCC

spill prevention, control and countermeasures

SPCCP

spill prevention, control, and countermeasures plan

SPiRiT

sustainable project rating tool

SRP

Sustainable Range Program

STC

Sound Transmission Class

std

standard

SWARS

Solid Waste Annual Reporting System

SWPPP

stormwater pollution prevention plan

T&E

threatened and endangered

TAG

The Adjutant General

TB

technical bulletin

TB MED

technical bulletin, medical

TC

training circular

TDA

tables of distribution and allowances

TG

technical guide

TJAG

The Judge Advocate General

TM

technical manual

TMDL

total maximum daily load

TNCWS

Transient Non-Community Water System

TNT

trinitrotoluene

TO&E

table of organization and equipment

TRADOC

Training and Doctrine Command

TRC

Technical Review Committee

TRI

toxic release inventory

TSCA

Toxic Substances Control Act

TSG

The Surgeon General

TWCF

transportation working capital funds

USACE

U.S. Army Corps of Engineers

USACHPPM

U.S. Army Center for Health Promotion and Preventive Medicine

USAEC

U.S. Army Environmental Command

USAES

U.S. Army Engineer School

USC

United States Code

USCG

U.S. Coast Guard

USDA

U.S. Department of Agriculture

USFWS

U.S. Fish and Wildlife Service

USGS

U.S. Geological Survey

UST

underground storage tank

UXO

unexploded ordnance

VOC

volatile organic compound

WMM

waste military munitions

Section II**Terms****Acquisition, Real Estate**

Obtain, use, or control real property by purchase, condemnation, donation, exchange, easement, license, lease, permit, revestment and recapture as defined in AR 405–10.

Acquisition, Life Cycle

Applies to processes and procedures by which defense services identify requirements; conduct research, development, test and evaluation; develop logistics support; field and ultimately dispose of materiel systems and equipment; and upgrade existing systems/equipment.

Action

All activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas.

Action area

All areas to be affected, directly or indirectly, by the Federal agency action and not merely the immediate area involved in the action.

Activity

A unit, organization, or installation that performs a function or mission.

Adverse effect (under NHPA)

A harmful or detrimental change in the character or use of historic properties. Adverse effects include, but are not

limited to, physical destruction, damage, or alteration; isolation from or alteration of the setting; introduction of visual, audible, or atmospheric elements that are out of character; neglect; and transfer, lease, or sale of historic property.

Aerial Spray Statement of Need

A formal document prepared by DOD pest management consultant with certification in DOD Category 11, Aerial Application. If this document states that the proposed project is justified, preparation of an environmental assessment or environmental impact statement (EIS) is initiated and prepared.

Agency official (under NAGPRA)

Any individual authorized by delegation of authority within a Federal agency to perform the duties relating to these regulations (43 CFR 10). (43 CFR 10.2 (a)(2)) For Army installations the garrison commander (GC) serves as the agency official under NAGPRA.

Agricultural lease or outlease

Use of Army lands under a lease to an agency, organization, or person for growing crops or grazing animals.

Appropriate facilities

For purposes of EMS implementation, appropriate facilities are defined as the Army major installations identified by ACSIM as having operations and activities with the potential to significantly impact human health and/or the environment. Appropriate facilities must fully comply with EMS implementation requirements specified in this regulation. ACSIM will periodically update the appropriate facilities listing and promptly advise those installations that are added or removed.

Archaeological resource (under ARPA)

Any material of human life or activities that is at least 100 years of age, and which is of archaeological interest.

Army alternate procedures (AAP)

Procedures that Army installations and facilities may elect to follow in lieu of Advisory Council on Historic Preservation (ACHP) regulations to comply with the goals and mandates of the National Historic Preservation Act (NHPA) Section 106.

Army Command (ACOM)

An Army force, designated by the Secretary of the Army, performing multiple Army Service Title 10 functions (3013b) across multiple disciplines. Command responsibilities are those established by the Secretary and normally associated with administrative control (ADCON).

Army compatible use buffer (ACUB)

Formal agreements between Army and eligible entities for acquisition by the entities of land or interest in land and water rights from willing sellers. Formal agreements include limiting encroachment through acquisition of development rights, cooperative agreements (CAs), conservation easements, and other means to support land acquisition or affect land use in accordance with applicable laws. Development and implementation of an ACUB does not constitute an acquisition of real property. Land conveyances for conservation may supplement ACUBs. Authority is 10 USC 2684a and 2694a.

Army proponent

The Army unit, element, or organization responsible for initiating or carrying out the proposed action.

Army Senior Consultant

The individual designated by the DEP, who serves as the senior Army staff officer for technical guidance and management of the Army Pest Management Program and as ACSIM representative to the Executive Council of the Armed Forces Pest Management Board.

Army Service Component Command (ASCC)

An Army force, designated by the Secretary of the Army, comprised primarily of operational organizations serving as an Army component for a combatant commander. If designated by the combatant commander, serves as a Joint Forces Land Component Command (JFLCC) or Joint Task Force (JTF). Command responsibilities are those established by the Secretary and normally associated with operational control (OPCON) and administrative control (ADCON).

Best management practice

Best management practices are methods that have been determined to be the most effective and practical means of preventing or reducing pollution and/or environmental impacts.

Biological assessment

Information prepared by or under the direction of a Federal agency using the procedures in 50 CFR 402.12 concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area and the evaluation of potential effects of the action on such species and habitat.

Biological diversity

The variety of life and its processes. It includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Biological evaluation

A written document setting forth an installation's biologically supportable rationale for determining the effects an action will have on a listed or proposed species or critical habitat. A biological evaluation is an informal document and is used for actions only if a biological assessment is not required.

Biological opinion (BO)

The document that states the opinion of the U.S. Fish and Wildlife Service (USFWS) or National Oceanic and Atmospheric Administration (NOAA) - Fisheries as to whether or not the Federal agency action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat; a summary of the information on which the opinion is based and a detailed discussion of the effects of the action on listed species or designated critical habitat.

Candidate species

(see species designations)

Certification as pesticide applicator

The formal recognition of training and competency to perform pesticide applications per the DOD Instruction and Plan. DOD employees certified per the DOD Plan can, without obtaining additional State certification, use and supervise the use of restricted-use pesticides while engaged in performing their official duties.

Certification official (pesticide applicators)

The DOD professional pest management personnel (PPMP) who reviews and validates the qualifications of DOD pesticide applicators to meet the standards in the DOD Plan. In the Army, certification officials are nominated by the ASC through the DEP, for approval by the Executive Director, AFPMB. See Pest management consultant.

Certified pesticide applicator

Any individual who applies pesticides or supervises the use of pesticides by others and who has been authorized to do so by successfully completing a training program approved by the Environmental Protection Agency (EPA), followed by formal certification by DOD, State or for overseas, by the Installation Management Command (IMCOM) certification official.

Chemical warfare agent

A substance which, because of its chemical properties, is used in military operations or terrorist attacks to kill, seriously injure, or incapacitate humans or animals or deny use of water, food supplies, and/or other indigenous resources to combatants or civilian populations. Some types of pesticides and herbicides (especially organophosphate-based substances) were initially developed and tested for use as chemical warfare agents, and only later adapted for non-military and agricultural applications. Chemical warfare agents are the V- and G-series nerve agents; H-series (that is, "mustard" agents) and L-series (that is, lewisite) blister agents; and certain industrial chemicals, including: hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG)), when contained in a military munition. Chemical warfare agents do not include: riot control agents (for example, w-chloroacetophenone (CN); o-chlorobenzylidenemalononitrile ((CS) tear gas); chemical herbicides; smoke or incendiary compounds; and industrial chemicals that are not configured as a military munition.

Chemical warfare materiel

Items generally configured as a munition containing a chemical substance that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. CWM includes V- and G-series nerve agent; H-series (mustard) and L-series (lewisite) blister agent, in other-than-munition configuration; and certain industrial chemicals (for example, hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG)) configured as a

military munition. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM. CWM does not include: riot control agents; chemical herbicides; industrial chemicals (for example, AC, CK, or CG) not configured as a munition; smoke and flame producing items; or soil, water, debris or other media contaminated with chemical warfare agents.

Class I and Class II ozone depleting substances (ODS)

Class I ODS have a greater ozone-depletion potential than Class II ODS. Class II ODS are generally considered safer than Class I ODS. Class I and Class II are defined in the Clean Air Act (CAA) Amendments of 1990. (See 40 CFR 82, Appendix A and B).

Command

A unit or units, an organization, or an area under the command of one individual.

Community water system

A public water system that supplies water to the same population year-round.

Compliance agreement

Any negotiated agreement between regulatory officials and regulatee for the purpose of attaining or maintaining compliance. Regulatee must have participated and influenced the terms of the agreement.

Compliance-related cleanup

Compliance-related cleanup (CC) includes actions to address contamination at Army facilities overseas; contamination resulting from operations that have occurred since October 1986 (i.e., non-DERP) at Army Active, Excess, and Special installations, and Army National Guard (ARNG) Federally-owned facilities; and contamination at Non-Federally owned, Federally-supported ARNG facilities. As a key element of the broader Army Environmental Cleanup Strategy (AECS) and its associated Environmental Cleanup Strategic Plan, the CC mission at Army installations and facilities is to perform appropriate, cost-effective cleanup to protect human health, safety, and the environment, and to sustain operational readiness and training. Specifically, for overseas facilities, the CC mission is to address contamination that resulted from Army operations, presents a known imminent and substantial endangerment to human health and safety, and is located on or emanates from an Army facility. The CC Guidance Manual, September 2004, provides specific guidance on CC procedures and project eligibility.

Comprehensive agreement (under NAGPRA)

Agreements developed regarding the treatment and disposition of human remains, funerary objects, sacred objects, or objects of cultural patrimony excavated intentionally or discovered inadvertently on Federal lands.

Conference

The process which involves informal discussions between a Federal agency and the USFWS or NOAA–Fisheries regarding the impact of an action on proposed species or proposed critical habitat and recommendations to minimize or avoid the adverse effects.

Conservation

The wise use and scientific management of natural and cultural resources according to principles that provide optimum public benefit, continued productivity and sustainability for present and future generations, and support of the military mission.

Conservation law enforcement professional

A DOD law enforcement professional with additional training in natural resources and Archaeological Resources Protection Act (ARPA) law enforcement training.

Conservation Reimbursable and Fee Collection Programs

Includes the Army's proceeds generating Forestry, Fish and Wildlife, and Agricultural/Grazing Outlease programs.

Conserve/conservation (of species)

To use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to 16 USC Chapter 35 (ESA) are no longer necessary.

Construction

Any land-disturbing activity.

Consumer Confidence Report

A water quality report provided to consumers annually, as required under 40 CFR 141, Subpart O. All community water systems (CWS) are required to prepare and distribute annual CCRs that briefly summarize information regarding water sources, detected contaminants, compliance, and educational information.

Contaminant

An undesirable substance (physical, chemical, biological, or radiological) not normally present, or an unusually high concentration of a naturally occurring substance in water or soil.

Contingency plan

A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or other accident that releases toxic chemicals, hazardous waste (HW), or radioactive materials that threaten human health or the environment.

Continual improvement

The process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organization's environmental policy.

Critical habitat

Specific areas within the geographical area occupied by the species at the time it is listed in accordance with 16 USC Chapter 35 (ESA), on which are found those physical or biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection. It also includes specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the 16 USC Chapter 35 (ESA), upon a determination by the Secretary of Interior or Commerce that such areas are essential for the conservation of the species. The areas formally designated as critical habitat by the USFWS or NOAA–Fisheries and listed in 50 CFR 17 and 226.

Cultural resources

Historic properties as defined by the NHPA, cultural items as defined by NAGPRA, archeological resources as defined by ARPA, sacred sites as defined in EO 13007 to which access is afforded under AIRFA, significant paleontological items as described by 16 USC 431–433 (Antiquities Act of 1906), and collections and associated records as defined in 36 CFR 79.

Curation

An integral element of the archaeological process that refers to the long term management and preservation of archaeological materials and their associated documentation.

Destruction or adverse modification

The direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining T&E habitat to be critical.

Direct Reporting Unit (DRU)

An Army organization comprised of one or more units with institutional or operational functions, designated by the Secretary of the Army, providing broad general support to the Army in a normally single, unique discipline not otherwise available elsewhere in the Army. DRUs report directly to a Headquarters, Department of the Army principal and/or Army Command and operate under authorities established by the Secretary of the Army.

Discarded military munitions

Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance (UXO), military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations. (10 USC 2710(e)(2)).

Discharge

A term that includes the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of a substance into or on any land or water (40 CFR 260.10).

Discharge classifications (for oil)

The classifications of accidental discharges listed below, provided to guide the on-scene coordinator (OSC), are criteria for general response actions. They are not criteria for reporting, nor do they imply associated degrees of hazard to the

public health or welfare, nor are they measures of environmental damage. However, a discharge that is a substantial threat to the public health or welfare, or results in critical public concern, will be classed as a major discharge. Discharges are quantitatively measured as follows:

- a. Minor discharge: A discharge to the inland waters or less than 1,000 gallons of oil; or a discharge of less than 10,000 gallons of oil to the coastal waters.
- b. Medium discharge: A discharge of 1,000 gallons to 10,000 gallons of oil to the inland waters, or a discharge of 10,000 to 100,000 gallons of oil to coastal waters.
- c. Major discharge: A discharge of more than 10,000 gallons of oil to the inland waters, or more than 100,000 gallons of oil to the coastal waters.

Disposal (real property)

Any authorized method of permanently divesting DA of control of and responsibility for real property. Reference AR 405–90 for definition of real property.

Disposal (waste)

The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or HW into or on any land or water. The act is such that the solid waste or HW, or any constituent thereof, may enter the environment or be emitted into the air or discharged into any waters, including ground water (40 CFR 260.10).

Domestic sewage

Waste and wastewater from humans or from household operations that are discharged to or otherwise enter treatment works.

Ecosystem sustainability

A condition of living communities that meets, or can be manipulated to meet, current mission, compliance, stewardship and production needs without compromising the future ability to meet those needs. Compliance and stewardship include the protection of all resources, especially soil, water, threatened and endangered (T&E) species, and wildlife.

Effect (under NHPA)

Alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.

Effluent limitation

Any restriction established by the EPA on quantities, rates, and concentrations of chemical, physical, biological and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone or the ocean.

Eligible entities

As it pertains to Section 2684a, National Defense Authorization Act (NDAA) fiscal year (FY) 03, an eligible entity that can enter into cooperative agreements (CAs) with the military can be a State government or political subdivision, or a private entity whose purpose is land and natural resource conservations, restoration, or preservation. As it pertains to Section 2694a, NDAA FY03, an eligible entity can be a State government or political subdivision, or a non-profit organization whose primary purpose is natural resource conservation on real property.

Emission standards

Limits on the quality of emissions that may be discharged to the atmosphere from any regulated source, established by Federal, State, local, and host nation (HN) authorities.

EMS Representative

The individual(s) appointed in writing by an organization's leadership who has defined roles, responsibilities, and authority for ensuring that EMS requirements are established, implemented, and maintained in accordance with ISO 14001 and this regulation. The EMS representative will report on the performance of the EMS to management for review and continual improvement of the EMS.

Encroachment

All external influences threatening or constraining testing and training activities required for force readiness and weapons acquisition. Such encroachment stems from environmental (for example, noise, endangered species, cultural resources, UXO, and munitions constituents (MC)), social (for example, urban sprawl), and economic (for example, changing land values) influences. Impacts include, but are not limited to, restrictions on available testing and training

locations; restrictions on available times and duration for testing and training; reduced effectiveness of testing and training activities; and restrictions on weapons systems, equipment, and munitions used during testing and training.

Enforcement action

A formal, written notification by the EPA or other authorized Federal, State, inter-state, regional or local environmental regulatory agency of violation of any applicable statutory or regulatory requirement. Enforcement action does not include warning letters, notices to comply, notices of potential liability, notices of significant noncompliance, pre-enforcement conference letters, informal notices of deficiencies, or notices of deficiencies to permit applications. One written notice, regardless of the number of individual violations, findings, or citations listed in it, counts as one enforcement action. If the enforcement action cites violations in more than one statutory requirement, then count it as multiple enforcement actions, one under each of the applicable statutory requirement categories. Items found to be out of compliance during an internal or other DOD Component review, compliance reviews, or audits are not included in this definition of enforcement action.

Environment

All of the following are elements of the natural and man-made environment:

- a. Navigable waters.
- b. Near-shore and open waters and any other surface water.
- c. Groundwater.
- d. Drinking water supply.
- e. Land surface or subsurface area.
- f. Ambient air.
- g. Vegetation.
- h. Wildlife.
- i. Humans.
- j. Noise.
- k. Cultural resources.
- l. Socioeconomics.
- m. Coastal resources.

Environmental agreement

Environmental agreements are formal agreements between the Army and other entities to address actual or potential environmental concerns, delineate roles and responsibilities related to specific actions of mutual interest, and/or to reach consensus on courses of action. Environmental agreements include but are not limited to consent orders, compliance agreements, consent agreements, settlements, Federal facility agreements, ACUB agreements, and inter-agency agreements.

Environmental aspect

An element of an organization's activities, products, or services that can interact with the environment. A priority environmental aspect is an environmental aspect that has or can have an impact on the mission and/or the environment.

Environmental audit

A systematic, documented, verification process of objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform to audit criteria (for example, compliance with Federal, State, and local environmental regulations) and communicating the results of this process to management. These reviews are not audits as defined in DODI 7600.2.

Environmental awareness training

Environmental knowledge conveyed by written or on-line information, hands-on training, or formal presentations. It is often provided outside a normal school classroom or regularly-scheduled class. It has limited applicability to teaching competence in specific job skills. It is intended to promote an environmental stewardship ethic and create an understanding of the importance of performing job skills in accordance with appropriate environmental requirements. It also encourages consultation with environmental staff and Army or local compliance publications to determine specific procedures.

Environmental condition of property

The Army does not consider the transfer of property from the Army to another Federal agency for their end use to be a deed transfer. The Army must sufficiently document the environmental condition of property being transferred to another Federal agency; therefore, an Environmental Baseline Survey is required. Also, the Army requires an Environmental Condition of Property (ECP) report, a document similar to a finding of suitability to transfer (FOST).

a. An ECP is the same as a FOST, with the following exceptions:

(1) Regulatory participation/review should parallel DOD finding of suitability to lease (FOSL) guidance, which does not require mandatory 30-day review, but early document sharing is encouraged.

(2) IMCOM Regions sign the ECP for categories 1, 2, 3, and 4 (see category descriptions below). Regions may further delegate authority for ECP categories 1 and 2 to GCs. GCs should decide on a property's suitability for lease or transfer. During staffing of the real estate action, HQDA and the Regions, as appropriate, will review the ECP for concurrence.

(3) CERCLA covenant and warranty are not required, since there is no deed.

(4) Transfer prior to all cleanup being complete is allowed and is encouraged.

(5) The Army should negotiate responsibility for environmental cleanup and compliance requirements with the Federal agency acquiring the property.

b. DOD guidance defines seven categories for describing the ECP, based on the extent of environmental contamination on the property and on the status of any associated restoration activities. These categories are defined with respect to CERCLA hazardous substances:

c. Category 1: Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

d. Category 2: Areas where only release or disposal of petroleum products has occurred.

e. Category 3: Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response.

f. Category 4: Areas where release, disposal, and/or migration of hazardous substances has occurred and all removal or remedial actions to protect human health and the environment have been taken.

g. Category 5: Areas where release, disposal, and/or migration of hazardous substances has occurred and removal or remedial actions are under way, but where all required remedial actions have not yet been taken.

h. Category 6: Areas where release, disposal, and/or migration of hazardous substances have occurred, but where required actions have not yet been implemented.

i. Category 7: Areas that have not been evaluated or that require additional evaluation.

Environmental considerations

The spectrum of environmental media resources, or programs that may impact on, or are affected by, the planning and execution of military operations. Factors may include, but are not limited to, environmental compliance, pollution prevention, conservation, protection of historical and cultural sites, and protection of flora and fauna (Joint Publication (JP) 1-02).

Environmental enhancement

Actions taken to improve the environment. These actions include measures intended to prevent or abate environmental pollution and to meet environmental quality standards.

Environmental hazard

Environmental hazards include all activities that may pollute, create negative noise related effects, degrade archeological/cultural resources, or negatively affect threatened or endangered species habitat. They may also include environmental health related hazards. (See FM 3-100.4, chap 2).

Environmental impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services.

Environmental management system (EMS)

That part of an organization's overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing, and maintaining the organization's environmental policy.

Environmental management system (EMS) audit

A systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organization's environmental management system (EMS) conforms to the EMS audit criteria set by the organization, and for communication of the results of this process to management.

Environmental objective

An overall environmental goal, arising from the environmental policy, that an organization sets for itself to achieve, and which is quantified where practicable.

Environmental officer

An individual assigned to a table of organization and equipment (TO&E) or table of distributions and allowances (TDA) organization or unit to accomplish environmental compliance requirements on behalf of his or her responsible commander, director, or supervisor. Designated person also coordinates with supporting permanent installation environmental staff for requirements clarification and assistance. In the Army National Guard (ARNG), coordination is with NGB-ARNG State environmental staff; in the Reserves, with Regional Support Command environmental staff. Organizational levels, and required grade or rank, suitable for assignment of compliance officer duties will be determined by the commander. Commanders should consider mandatory Federal training requirements as well as mission workloads in determining assignment of environmental officers at Battalion and unit (Company, Battery, Troop) level.

Environmental performance

Measurable results of the environmental management system, related to an organization's control of its environmental aspects, based on its environmental policy, objective, and targets.

Environmental planning

Efforts that consider the impact of day-to-day base operations and activities, operational readiness activities, training, exercises, or weapons system introduction on the environment, and where necessary, allow decision makers to take early action to eliminate or mitigate those impacts. Additionally, environmental planning may require consultation or submission of documentation to demonstrate that environmental considerations have been taken.

Environmental policy

A statement by the organization of its intentions and principles in relation to its overall environmental performance that provides a framework for action and for the setting of its environmental objectives and targets.

Environmental pollution

The condition resulting from the presence of chemical, mineral, radioactive, or biological substances that

- a. Alter the natural environment.
- b. Adversely affect human health or the quality of life, biosystems, the environment, in structures and equipment, recreational opportunities, aesthetics, and/or natural beauty.

Environmental target

A detailed performance requirement based on ISO 14001, quantified where practicable, applicable to the organization or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.

Environmental training

Instruction whose primary purpose is to provide measurable competence for doing specific environmental jobs or tasks. Some is mandated by law or regulation. Commonly taught in a classroom, by such methods as lecture, discussion, or practical exercise. However, other methods may also be used, including web-based or other "distance learning." Environmental training includes both separate environmental courses and environmental content in non-environmental courses.

Environmental stewardship

Management and oversight of environmental, natural and living resource assets including but not limited to land, air, water, soils, vegetation, and wildlife. The Army's objective is to plan, initiate, and carry out its actions and programs in a manner that minimizes adverse effects on the environment without impairing the mission and to manage impacts so as to sustain the capability of Army lands to support future as well as present mission uses of ranges and training lands. See also paragraph 1-1(a).

EPA Identification Number

The number assigned by EPA to each HW generator, transporter, and treatment, storage or disposal facility. Reference 40 CFR 260.10; 264.11; 265.11; TB 43-0244, Unit Level Procedures for Handling Service Supplies, Hazardous Materials, and Waste.

Estuary

Regions of interaction between rivers and near-shore ocean waters, where tidal action and river flow mix fresh and salt water. Such areas include bays, mouths of rivers, salt marshes, and lagoons. These brackish water ecosystems shelter and feed marine life, birds, and wildlife.

Executive agent

Executive agents (EA) are individuals designated by the Office of the Secretary of Defense (OSD) and are responsible for development, maintenance, oversight of and compliance with the Final Governing Standards (FGS) for specified foreign nations. Executive agents are also responsible for consulting with host-nation authorities on environmental issues, as required to maintain effective cooperation on environmental matters, and should coordinate with other DOD components in the specific nation.

Explosives or munitions emergency response

All immediate response activities by an explosives and munitions emergency response specialist to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. An explosives or munitions emergency response may include in-place, render-safe procedures, treatment or destruction of the explosives or munitions, and/or transporting those items to another location to be rendered safe, treated, or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen, or uncontrollable circumstance will not terminate the explosives or munitions emergency. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at Resource Conservation and Recovery Act (RCRA) facilities. (Military Munitions Rule, 40 CFR 260.10).

Extremely hazardous substance

A substance included in appendix A or B of 40 CFR 355.

Facility

Facilities include buildings, structures, public works, equipment aircraft, vessels, and other vehicles and property under control of, or constructed or manufactured for leasing to the Army.

Federal

Of or pertaining to a department, agency, or instrumentality of the Federal Government of the United States.

Federal agency official

An individual designated by the head of any department, agency, or instrumentality of the United States (excluding the Smithsonian Institution) as having specific authority to represent the organization on official matters.

Federal Land Manager

An individual having specific authority to manage any land other than tribal lands which are controlled or owned by the United States, including lands selected by but not yet conveyed to Alaska Native Corporations and groups organized pursuant to the Alaska Native Claims Settlement Act of 1971.

Federally-listed Species

(see species designations)

Federally-owned treatment works (FOTW)

A facility that is owned and operated by a department, agency, or instrumentality of the Federal government treating wastewater, a majority of which is domestic sewage, prior to discharge in accordance with a permit issued under section 402 of the Federal Water Pollution Control Act (FWPCA).

Fees

Monetary charges by a regulator for some type of service. Examples include permits, registrations, and inspections.

Final Governing Standards (FGS)

The FGS are a comprehensive set of country-specific substantive environmental provisions, typically technical limitations on effluent, discharges, etc., or a specific management practice, with which all DOD components must comply in a given foreign nation. The FGS are developed by the DOD designated executive agent (EA) via a comparative analysis of standards in the Overseas Environmental Baseline Guidance Document (OEBGD), generally applicable host-nation laws, and relevant international agreements. The FGS generally include the standards determined by the EA to be more protective of human health and the environment.

Finding of suitability for early transfer (FOSET)

The primary purpose of a finding of suitability for early transfer (FOSET) is to document that the property is suitable for early transfer for the use intended by the transferee, and the intended use is consistent with protection of human health and the environment. A FOSET must demonstrate that the deed or other agreement proposed to govern the transfer between the United States and the transferee of the property contains the appropriate response action assurances specified in CERCLA Section 120(h)(3)(C)(ii): the Federal agency requesting the deferral has provided

notice, by publication in a newspaper of general circulation in the vicinity of the property, of the proposed transfer and of the opportunity for the public to submit, within a period of not less than 30 days after the date of the notice, written comments on the suitability of the property for transfer; and the deferral and the transfer of the property will not substantially delay any necessary response action at the property.

Finding of suitability to lease (FOSL)

A finding of suitability to lease (FOSL) is the document that conveys the result of the evaluation process used to determine that DOD property is environmentally suitable to lease. The determination of suitability to lease property is made only when the intended use of the leased property is consistent with protection of human health and the environment and will not interfere with any existing or planned environmental restoration activities. A FOSL is not required, unless deemed necessary by the DOD Component, for easements for use of real property. The FOSL and the process for preparing one are similar to the FOST and its preparation process. Similar to the FOST, preparation of a FOSL does not obviate the need to comply with the National Environmental Policy Act (NEPA).

Finding of suitability to transfer (FOST)

The primary purpose of a finding of suitability to transfer is to document that the property is environmentally suitable for transfer by deed under CERCLA and DOD FOST Guidance. The FOST process was developed to meet the statutory and regulatory requirements associated with transferring Federal real estate. A FOST must demonstrate that either the property is uncontaminated or that all necessary remediation has been completed or is in place and operating properly and successfully. These demonstrations are necessary to support the deed covenant required by CERCLA Section 120(h) that all remedial action necessary to protect human health and the environment has been taken. In addition, under CERCLA Section 120(3)(A), a deed to transfer property by the United States must contain (1) notice of the type and quantity of hazardous substances, (2) notice of the time at which such hazardous substance, storage, release, or disposal took place, and (3) a description of any remediation action taken.

Fine

Any monetary penalty or assessment levied for violation of any environmental law or regulation.

Forest management

The science, the art and the practice of managing the natural resources that occur on or in association with forest lands to achieve installation and Army goals.

Forest products

All plant materials in wooded areas that have commercial value.

Formal consultation

The process between the USFWS or NOAA–Fisheries and a Federal agency that commences with the Federal agency's written request for consultation and concludes with the issuance of a BO from the USFWS or NOAA–Fisheries.

Formerly used defense sites (FUDS)

A FUDS is defined as a facility or site (property) that was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances. By DERP policy, the FUDS program is limited to those real properties that were transferred from DOD control prior to 17 October 1986. FUDS properties can be located within the 50 States, District of Columbia, Territories, Commonwealths, and possessions of the United States.

Garrison commander (GC)

The GC is a military officer, Lieutenant Colonel or Colonel, selected by the Department of the Army. The GC commands the garrison, and is responsible for day-to-day operations to maintain living and working conditions for all personnel on the installation. The GC is the lead for base support operations management for the senior mission commander/installation commander (SMC/IC). The GC is rated by the Regional Director and senior rated by the mission commander, either the IC or SMC, as applicable. The GC is IMCOM's executive agent at installation level, providing IMCOM services and obtaining resources through IMCOM channels. The GC also provides continuity of installation command during mission activity deployments. The GC may be appointed as Summary Courts Martial convening authority or Special Courts Martial convening authority for the installation and its supported area. In some cases, the senior IMCOM official on an installation may be a civilian, the Garrison Manager (GM). A GM, as the civilian equivalent of a GC, has the same responsibility and authority as the military counterpart, with the exception of Uniform Code of Military Justice (UCMJ) and command authority, as defined by AR 600–20 (para 1–5a). The GC/GM:

- a. Commands the U.S. Army Garrison.
- b. Provides IMCOM services in accordance with respective guidance and common levels of support.

- c. Coordinates and integrates the delivery of garrison support activity services.
- d. Prioritizes requirements and support operations.

Generator

See Hazardous waste generator.

Grounds

This definition is used to classify installation acreage according to the level of grounds maintenance required and includes all land and water acreage for which an installation commander has responsibility (including satellite areas). Grounds are grouped into the following three categories:

- a. Improved grounds. This category includes acreage on which intensive grounds maintenance activities must be planned and performed annually as fixed requirements. Activities include mowing, irrigation, fertilization, cultivation, aeration, seeding, sodding, spraying, pruning, trimming; weed, dust and erosion control; drainage, planting for landscape effect, wind and sound abatement, and other intensive practices.
- b. Semi-improved grounds. This category includes areas on which periodic recurring grounds maintenance is performed but to a lesser degree than on improved grounds. Practices normally include such cyclic variables such as soil sterilization, weed and brush control, drainage maintenance, mowing for fire protection and major land repair/restoration/rehabilitation that may result from mission activities. Semi-improved grounds acreage may be combined with improved grounds acreage for reporting purposes only when two categories of grounds (improved and other than improved) are used.
- c. Unimproved grounds. All other acreage (including water areas, areas under buildings and surfaced areas) not classified as improved or semi-improved. Practices and intervals of attention are generally unpredictable such as might evolve from flood, fire, insects, or disease epidemics

Groundwater

Water contained within the earth's subsurface that is under pressure equal to or greater than atmospheric pressure.

Habitat

An area where a plant or animal species lives, grows, and reproduces, and the environment that satisfies any of their life requirements.

Harmful discharge (of oil)

Harmful discharges are such that they do at least one of the following:

- a. Violate applicable water quality standards.
- b. Cause a film or sheen upon, or discoloration of, the surface of the water or adjoining shorelines.

Hazardous chemical

A hazardous chemical is defined in 40 CFR 355 and 370 which implement the Emergency Planning and Community Right-to-Know Act (EPCRA). Those sections define hazardous chemical as defined under Paragraph (c), Section 1200, Part 1910, Title 29, Code of Federal Regulations (29 CFR 1910.1200), except that such term does not include the following substances:

- a. Any food, food additive, color additive, drug, or cosmetic regulated by the Food and Drug Administration.
- b. Any substance present as a solid in any manufactured item to the extent exposure to the substance does not occur under normal conditions of use.
- c. Any substance to the extent it is used for personal, family, or household purposes, or is present in the same form and concentration as a product packaged for distribution and used by the general public.
- d. Any substance to the extent it is used in a research laboratory or a hospital or other medical facility under the direct supervision of a technically qualified individual.
- e. Any substance to the extent it is used in routine agricultural operations or is a fertilizer held for sale by a retailer to the ultimate customer.

Hazardous material

A material as defined by Federal Standard, Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities ((FED-STD-313C, 3 April 96) (The General Services Administration (GSA) has authorized the use of this Federal standard by all Federal agencies)).

- a. Any item or chemical which is a "health hazard" or "physical hazard" as defined by the Occupational Safety and Health Act (OSHA) in 29 CFR 1910.1200, which includes the following:

(1) Chemicals which are carcinogens, toxic, or highly toxic agents, reproductive toxins; irritants, corrosives, sensitizers, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucus membranes.

(2) Chemicals which are combustible liquids, compressed gases, explosives, flammable liquids, flammable solids, organic peroxides, oxidizers, pyrophorics, unstable (reactive) or water-reactive.

(3) Chemicals which in the course of normal handling, use, or storage operations may produce or release dusts, gases, fumes, vapors, mists or smoke which have any of the above characteristics.

b. Any item or chemical which is reportable or potentially reportable or notifiable as inventory under the requirements of the Hazardous Chemical Reporting (40 CFR 370), or as an environmental release under the reporting requirements of the Toxic Chemical Release Reporting: Community Right To Know (40 CFR 372), which include chemicals with special characteristics which in the opinion of the manufacturer can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other receptacles).

c. Any item or chemical which, when being transported or moved, is a risk to public safety or an environmental hazard and is regulated as such by one or more of the following:

- (1) Department of Transportation Hazardous Materials Regulations (49 CFR 100–180).
- (2) International Maritime Dangerous Goods Code of the International Maritime Organization.
- (3) Dangerous Goods Regulations of the International Air Transport Association.
- (4) Technical Instructions of the International Civil Aviation Organization.
- (5) U.S. Air Force Joint Manual, Preparing Hazardous Materials for Military Air Shipments (AFJMAN 24–204).

Hazardous substance

A substance as defined by section 101(14) of CERCLA.

a. For the purposes of this regulation a hazardous substance is any of the following:

- (1) Any substance designated pursuant to section 311(b)(2)(A) of the CWA.
- (2) Any element, compound, mixture, solution, or substance designated pursuant to section 102 of the CAA.
- (3) Any HW having the characteristics identified under the RCRA.
- (4) Any toxic pollutant listed under 15 USC 2601, et seq. (TSCA).
- (5) Any hazardous air pollutant (HAP) listed under section 112 of the CAA.
- (6) Any imminently hazardous chemical substance or mixture with respect to which the EPA Administrator has taken action pursuant to subsection 7 of 15 USC 2601, et seq. (TSCA).

b. The term does not include:

- (1) Petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance in paragraph a above.
- (2) Natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures or natural gas and such synthetic gas usable for fuel).
- (3) A list of hazardous substances is found in Section 4, Part 302, Title 40, Code of Federal Regulations (40 CFR 302.4).

Hazardous waste (HW)

A waste identified in Section 3, Part 261, Title 40, Code of Federal Regulations (40 CFR 261.3) or applicable foreign law, rule, or regulation (see also solid waste).

Hazardous waste disposal

As defined in 40 CFR 260.10, disposal means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or HW into or on any land or water so that such solid waste or HW or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

Hazardous waste generator

The HW generator is defined in 40 CFR 260.10 and DOD 4715.5–G (OEBGD) C6.2.3. Any person or activity (unit, organization, or tenant), whose act or process produces HW identified or listed in part 261.10 or whose act first causes a HW to become subject to regulation. For reporting purposes in the Army, the GC is considered the generator. For fiscal purposes, the generator is the unit.

Hazardous waste storage

As defined in 40 CFR 260.10, the holding of HW for a temporary period, at the end of which the HW is treated, disposed of, or stored elsewhere.

Hazardous waste treatment

As defined in 40 CFR 260.10, any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any HW so as to neutralize such waste, or so as to recover

energy or material resources from the waste, or so as to render such waste non-hazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

Historic district (under NHPA)

A geographical area encompassing a number of historic properties (see historic property below).

Historic property (under NHPA)

Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria.

Inadvertent discovery (under NAGPRA)

Inadvertent discovery means the unanticipated encounter or detection of human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands.

Incidental take

For 16 USC Chapter 35 (ESA) incidental take is defined as “take of a listed fish or wildlife species that results from , but is not the purpose of, carrying out an otherwise lawful activity by the Federal Agency or applicant (50 CFR 402.02).

Indian Tribe

Indian Tribe means an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian Tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 USC 479a.

Inspection

Any visit by a regulatory agency, with legal authority, for the purpose of assessing regulatory compliance.

Installation

An aggregation of contiguous, or near contiguous, real property holdings commanded by a centrally-selected commander. Installations represent management organizations. An installation may be made of one or more sites. In addition, two types of “virtual” installations exist within the Army. The Army National Guard has virtual installations, identified as each state commanded by the Adjutant General, under which are Readiness Centers or sites. Each Army Reserve regional readiness command is, likewise, defined as a virtual installation under which Reserve centers are identified as sites.

Installation Commander (IC)

The IC is usually the senior mission commander (SMC) residing on the installation or in the surrounding community. The IC is responsible for mission activity services. The IC may be appointed as General Courts Martial convening authority for the installation and its support area.

a. The IC’s installation management responsibilities include:

- (1) Senior rate the GC.
- (2) Act as principal customer advocate to the GC.
- (3) Serve as the senior Army spokesperson to the surrounding community.
- (4) Provide installation management services that are the responsibility of the senior mission activity.
- (5) Oversee and prioritize force protection implementation.
- (6) Approve priorities for training and training support services, mission support, MCA projects, well being programs and force protection.
- (7) Approve installation-level policies for Soldiers in accordance with respective Army regulations.

b. The IC’s responsibilities may change in instances where the IC is remotely located away from the installation and does not have day-to-day oversight of installation activities.

Installation corrective action plan (ICAP)

A comprehensive plan developed by each installation that lists Environmental Performance Assessment System (EPAS) findings, proposed corrective actions, and the status of the findings. Installations are required to enter the ICAP in the EPAS software, and provide a copy to their commanders for review every year.

Installation Engineer

The installation level engineer responsible for the management, operation and maintenance of all real property to include: buildings, pavements, utility systems, natural and cultural resources, and environmental programs.

Installation Pest Management Coordinator

The individual officially designated by the installation commander to coordinate and oversee the installation pest management program and installation pest management plan. Pest management coordinators will be certified as pesticide applicators if their job responsibilities require them to apply or supervise the use of pesticides.

Integrated cultural resources management plan (ICRMP)

A 5-year plan developed and implemented by an installation commander to provide for the management of cultural resources in a way that maximizes beneficial effects on such resources and minimizes adverse effects and impacts without impeding the mission.

Integrated natural resources management plan (INRMP)

The installation commander's adaptive plan for managing natural resources to support and be consistent with the military mission while protecting and enhancing those resources for multiple use, sustainable yield, and biological integrity. The management of natural resources is a series of processes over a long period. The INRMP provides incremental steps to achieve those long-term goals, and normally includes a five-year schedule of activities.

Integrated pest management

Integrated pest management (IPM) is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

Integrated pest management plan

The IPMP is a long-range, comprehensive, planning and operational document required by DODI 4150.7 to ensure the establishment and maintenance of a safe, effective, and environmentally sound program for preventing and controlling damage to human health, facilities, infrastructure, materiel, or the environment that may be caused by problem species of insects, plants, animals, etc.

Integrated solid waste management

A practice using several alternative waste management techniques to manage and dispose of specific components of the municipal solid waste stream. Waste management alternatives include source reduction, recycling, composting, energy recovery, and land filling. (From EPA, Decision Maker's Guide, Volume II).

Integrated Training Area Management (ITAM) Program

The Army program for the management and sustainment of military training and testing lands, and other land uses which provides for: standardized range and training land assessment (RTLA) to inventory and monitor land; rehabilitation, revegetation and maintenance technologies; sustainable range awareness; decision support systems; and integration of military training requirements with land capabilities.

International agreement

An international agreement is a multilateral or bilateral treaty, a base rights or access agreement, a Status of Forces Agreement (SOFA), including practices and standards established pursuant to such agreement.

Invasive species

An alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Alien species means with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

International Organization for Standardization (ISO) 14000/14001

ISO 14000 is a group of voluntary international standards addressing environmental management systems, environmental auditing, environmental labeling, environmental performance evaluation, and life cycle assessments. The standards were developed by the International Organization for Standardization (ISO) and are commonly referred to as the ISO 14000 series. The series provides an organization with a systematic approach to environmental management. ISO 14001 provides the detailed specifications and requirements for an environmental management system, or EMS. A complete copy of the standard is available on the Defense Environmental Network and Information Exchange (DENIX).

Jeopardize the continued existence of

To engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of

both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

Land Condition Trend Analysis (LCTA) methods

Standardized land (soil, vegetation, topographic and wildlife) inventory and monitoring procedures used for the analysis and comparability of Army lands over time.

Land management

The planning and execution of programs to improve, utilize and maintain all land and water areas for the greatest long-term net public benefit while supporting the military mission. Included are subordinate land uses that are mutually compatible and consistent with maintaining environmental qualities.

Land use planning zone (LUPZ)

A contour that is used to account for days of higher than average operations. Noise sensitive land uses are compatible within the LUPZ.

Leak (release) detection system

A system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of product waste or accumulated liquid in the secondary containment structure. Such a system must employ operational controls (for example, daily visual inspections for releases into the secondary containment system of the aboveground tank) or consist of an interstitial monitoring device designed to continuously and automatically detect the failure of the primary or secondary containment structure in the presence of a release of HW into the secondary containment structure.

Lease

A written agreement which conveys a possessory interest in real property, usually exclusive, for a period of time for a specified purpose.

Lifecycle cost analysis

Determination of expenses incurred of a product or process over its entire existence. It includes all the cost of mining the raw materials to the eventual destruction and/or disposal of the product or process.

Listed hazardous substance

A substance designated under any of the following (any HW listed under or having the HW characteristics identified according to section 3001 of the RCRA & any substance listed under section 102 of CERCLA):

- a. Sections 307(a) and 311(b)(2)(A) of CWA.
- b. Section 112 of CAA.
- c. Section 7 of 15 USC 2601, et seq. (TSCA).

Listed species

Any species of fish, wildlife, or plant which has been determined to be endangered or threatened under section 4 of 16 USC 35 (ESA). Listed species are found in 50 CFR 17.11–17.12.

Low-level radioactive waste (LLRW)

Radioactive waste not classified as high level radioactive waste, transuranic waste, or a byproduct material as defined in subsection 11(i)(2) of Section 2011, Title 42, United States Code, (42 USC 2011, Atomic Energy Act). See also radioactive material below.

Materiel

All items (including ships, tanks, self propelled weapons, aircraft, etc., and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities) necessary to equip, operate, maintain, and support military activities without distinctions as to its application for administrative or combat purposes.

Measure of merit (MOM)

An objective criterion used to measure progress in achieving established DOD environmental performance goals.

Memorandum of agreement (under NHPA)

The document that records the terms and conditions agreed upon to resolve the adverse effects of an undertaking upon historic properties.

Memorandum of understanding (MOU)

A written document executed by the parties which establishes policies or procedures of mutual concern. It does not require either party to obligate funds and does not create a legally binding commitment.

Military munitions

Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DOD, the USCG, the Department of Energy, and the ARNG. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, except that the term does include non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under 42 USC 2011 (Atomic Energy Act) have been completed. (10 USC 2710(e)(3)(A) and (B)).

Military munitions response

DOD response actions (removal or remedial) to investigate and address the explosives safety, human health, or environmental risks presented by munitions and explosives of concern (MEC), discarded military munitions (DMM) and MC. (The response could be as simple as a notification to the community with an education program about the hazards posed by military munitions and how to avoid them, or as complicated as a long-term response action involving sophisticated technology, specialized expertise, and significant resources.)

Monitoring

The assessment of emissions and ambient air quality conditions. The following monitoring techniques are used:

- a. Emission estimates.
- b. Visible emission readings.
- c. Diffusion or dispersion estimates.
- d. Sampling or measurement with analytical instruments.

Multiple use

The integrated management of all natural resources, each with the other, to achieve the optimum use and enjoyment while maintaining the environmental qualities, ecological relationships and aesthetic values in proper balance.

Municipal Separate Storm Sewer System (MS4)

Any conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) owned by a state, city, local municipality, or Federal government and that is designed for the collection and conveyance of storm water, which is not combined with a sanitary sewer and not part of a publicly-owned treatment works (POTW).

Munitions and explosives of concern (MEC)

This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means:

- a. UXO, as defined in 10 USC 101(e)(5)(A);
- b. Discarded military munitions (DMM), as defined in 10 USC 2710(e)(2); or
- c. MC (e.g., trinitrotoluene (TNT), cyclotrimethylenetrinitramine (RDX)), as defined in 10 USC 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

Munitions constituents (MC)

Any material originating from UXO, discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 USC 2710)

Munitions response

Response actions, including investigations, removal actions, and remedial actions to address the explosives safety, human health, or environmental risk presented by MEC, DMM, or MC.

National Environmental Policy Act (NEPA)

U.S. statute that requires all Federal agencies to consider the potential effects of proposed actions on the human and natural environment.

National Pollutant Discharge Elimination System (NPDES) permit

A permit issued pursuant to section 402 of the FWPCA. A NPDES permit is required for the discharge of pollutants from any point source into waters of the United States.

National Register of Historic Places (NRHP)

The nation's inventory of known historic properties that have been formally listed by the National Park Service (NPS). The NRHP is administered by the NPS on the behalf of the Secretary of the Interior. National Register listings include districts, landscapes, sites, buildings, structures, and objects that meet the set of criteria found in 36 CFR 60.4

National Response Team (NRT)

A team of representatives from the primary and advisory agencies that serves as the national policy-making body for planning and preparedness actions to prevent and minimize accidental pollution discharges.

Native American Graves Protection and Repatriation Act (NAGPRA) Items

Human remains, funerary objects, sacred objects, or objects of cultural patrimony that are excavated intentionally from or inadvertently discovered on Federal or tribal lands.

Native Hawaiian Organization

Any organization that serves and represents the interests of, has a primary stated purpose to provide services to, and has expertise in Native Hawaiians and Native Hawaiian affairs. Such organizations must include the Office of Hawaiian Affairs and Hui Malama I Na Kupuna 'O Hawaii Nei.

Natural resources

The viable and/or renewable products of nature and their environments of soil, air, and water. Included are the plants and animals occurring on grasslands, rangelands, croplands, forests, lakes, and streams.

Noise zones I, II, and III

Land use planning areas for the purpose of maintaining uses that are compatible with the existing and future noise environments.

Non-Federal

Any entity that is not part of a department, agency, or instrumentality of the Federal government of the United States.

Non-point source

Diffuse sources of pollution (that is, without a single point of origin or not introduced into a receiving water from a discrete conveyance). Pollutants are generally carried off the land by stormwater or snow melt. Common non-point sources include agriculture, forestry, urban, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Noxious weed

Plant species identified by Federal or State agencies as requiring control or eradication.

Off-road vehicle (ORV)

A vehicle designed for travel on natural terrain. The term excludes a registered motorboat confined to use on open water and a military, emergency, or law enforcement vehicle during use by an employee or agent of the Government or one of its contractors in the course of employment or agency representation.

Oil

Oil or petroleum products of any kind or in any form, and oil mixed with wastes other than dredged spoil.

On-scene coordinator (OSC)

The Federal official pre-designated by EPA or USCG to coordinate and direct Federal responses under subpart D, and removals under subpart E, of 40 CFR 300 (National Oil and Hazardous Substances Pollution Contingency Plan); or

- a. The DOD or U.S. Department of Energy official designated to coordinate and direct the removal actions from releases of hazardous substances, pollutants, or contaminants where either the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of their departments respectively; or,
- b. The official designated by any other Federal department or agency to coordinate and direct removal actions other

than emergencies where either the release is on, or the sole source of the release from, any facility or vessel under the jurisdiction, custody, or control of those departments and agencies.

Open burning

The combustion of any material without the characteristics below:

- a. Control of combustion air to maintain adequate temperature for efficient combustion.
- b. Containment of the combustion reaction in an enclosed device to provide enough residence time and mixing for complete combustion.
- c. Control of emission of the gaseous combustion products.

Operating tempo (OPTEMPO)

Operating tempo is the pace of unit training that the Army believes it needs to conduct to maintain its fleet of tracked and wheeled vehicles at a prescribed readiness level. Stated another way, it is a resource gauge the Army measures to indicate the amount of miles or operating hours required to execute a unit commanders training strategy to achieve a given specific readiness level.

Operational noise

The outdoor noise environment consisting of the noise, including ambient noise, from all sources. The noise environment of the work place is not considered operational noise.

Operational range

A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities; or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities (10 USC 101(e)(3)(A) and (B)). Also includes "military range," "active range," and "inactive range" as those terms are defined in 40 CFR 266.201.

Operational readiness

The umbrella term and supporting program that encompasses all the resources required of a unit to maintain readiness standards.

Organization

Company, corporation, authority, or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration.

Outdoor recreation

Recreational program, activity, or opportunity that is dependent on the natural environment. Examples are hunting, fishing, trapping, picnicking, bird-watching, ORV use, hiking and interpretive trails use, wild and scenic river use, and underdeveloped camping areas. Developed or constructed activities such as golf courses, lodging facilities, boat launching ramps, and marinas are not included.

Outgrant

Reference AR 405–80 for specific definitions. A real property legal document which conveys or gives the right to use Army-controlled real property, including leases, permits, licenses, and easements.

Overseas Environmental Baseline Guidance Document (OEBGD)

A set of objective criteria and management practices developed by the DOD, to protect human health and the environment at overseas installations, and to be used by the designated EA during the comparative analysis process used to develop FGS. In addition, the OEBGD contains implementing guidance for executive agents, garrison commanders and DOD components.

Permanent installation

An aggregation of real property holdings under the jurisdiction of the DOD, controlled by and at which an Active Army unit or activity is permanently assigned.

Pest management

The prevention and control of animal and insect disease vectors and other pests that may adversely affect the DOD mission or military operations; the health and well-being of people; or structures, materiel, or property.

Pest management consultant

Personnel who meet the DOD educational and experience criteria for PPMP and who serve at IMCOM, USACHPPM regions, National Guard Bureau (NGB) and higher Army-levels of command. Pest management consultants interpret

and establish program standards for installation programs and are responsible for evaluating and providing technical guidance to support these programs.

Pest management quality assurance evaluator

Personnel technically qualified in the management and oversight of pesticide applicators and pest management contracts by training, per DOD standards, which protect the Government's interest through on-site performance evaluation of commercial contracts involving pest management or other contracts that involve the use of pesticides. See AR 5-20.

Pesticide

Any substance or mixture of substances, including chemical biological control agents, that may prevent, destroy, repel, or mitigate pests and are specifically labeled for use by the EPA. Also, any substance or mixture of substances used as a plant regulator, defoliant, desiccant, disinfectant, or biocide.

Pesticide security

The prevention of intrusion to areas used to store pesticides and other toxic chemicals to ensure that they have appropriate security protections to prevent intruder access to equipment used in mixing, loading, and applying pesticides. Pesticide applicators must have proper authorization and identification.

Pests

Arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds, mollusks, and other organisms (except for excluding microbial/bacterial/viral disease pathogens, but including organisms that may transmit human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

Point source

Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

Pollutant (water)

Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into water. A broad term which generally encompasses most material which is added to the water constitutes a pollutant.

Pollution

See environmental pollution.

Pollution prevention

Use of processes, materials, or products that avoid, reduce, or control pollution, which may include recycling, treatment, process changes, control mechanisms, efficient use of resources and material substitution.

Pollution prevention opportunity assessment

Provides the technical and economic information necessary for selecting appropriate pollution prevention techniques.

Pollution prevention plan

A plan developed and maintained by an installation commander that sets forth the installation's contribution to the goals and requirements established by EO 13423, including reductions in use and release of toxic chemicals and ODS and in the generation of HW.

Prescribed burning

Skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., to allow confinement of the fire to a predetermined area while producing the intensity of heat and rate of spread required to accomplish certain planned benefits. These benefits may include all or one or more objectives of silviculture, wildlife management, grazing, hazard reduction, etc. Its objective is to employ fire scientifically to realize maximum net benefits at minimum damage (if any) and acceptable cost.

Pretreatment (wastewater)

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant

properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a treatment works.

Pretreatment standard

Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307(b) and (c) of the FWPCA, which applies to Industrial Users. This includes prohibitive discharge limits established pursuant to Section 5, Part 403, Title 40, Code of Federal Regulations (40 CFR 403.5).

Primary agencies (for NRT)

The Federal departments or agencies comprising the National Response Team (NRT); i.e., the Departments of Commerce, Interior, Transportation, and Defense; and the EPA. These agencies have primary responsibility and resources to promote effective operation of the national oil and hazardous substances pollution contingency plan.

Primary drinking water standards

Standards for those contaminants in drinking water, which may cause an adverse health effect on the consumer. In the form of maximum contaminant levels, treatment, techniques, or action levels, these standards are federally enforceable.

Proactive

Taking the initiative by acting rather than reacting to events.

Professional pest management professional

The DOD military officers commissioned in the Medical Service or Biomedical Sciences Corps or DOD civilian personnel with college degrees in biological or agricultural sciences that are in a current assignment that includes pest management responsibilities exercised regularly. The DOD civilian employees also will meet Office of Personnel Management qualification standards. Based on assignment, some PPMP are Certifying Officials.

Programmatic agreement (PA) (under NHPA)

A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex undertaking or other situations in accordance with 36 CFR 800.14(b), NHPA.

Proponent

Proponent identification depends on the nature and scope of a proposed action. Any Army organization may be a proponent (for example, for a project, program, or regulation). In general, the proponent is the unit, element, or organization that is responsible for initiating and/or carrying out the proposed action. The proponent is responsible for programming and/or securing funding for such actions.

Proposed species

A fish, wildlife, or plant species that is proposed in the Federal Register to be listed as endangered or threatened under 16 USC 35 (ESA).

Publicly-owned treatment works (POTW)

Any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a State or municipality.

Public water systems

Systems that provide water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. There are three types of public water systems:

- a.* Community Water System (CWS): A public water system that supplies water to the same population year-round.
- b.* Non-Transient Non-Community Water System (NTNCWS): A public water system that regularly supplies water to at least 25 of the same people at least six months per year, but not year-round. Some examples are schools, factories, office buildings, and hospitals which have their own water systems.
- c.* Transient Non-Community Water System (TNCWS): a public water system that does not regularly supply water to at least 25 of the same persons over six months per year.

Quarantine

A restraint placed upon the activities or communication of persons or the transport of goods designed to prevent the spread of disease or pests.

Radioactive material

Any material or combination of materials that spontaneously emit ionizing radiation.

Range

A designated land or water area that is set aside, managed, and used for range activities of the DOD. The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration.

Range activities

Research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems.

Real property

This includes the definition for real property found in the Federal Property Management Regulations, 41 CFR 101–47.103.12.

Reclamation

Regeneration of a material, or processing of a material to recover a usable product. Examples include recovery of lead from spent batteries, or the regeneration of spent solvents.

Recovery

The improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of 16 USC 35 (ESA).

Recovery plan

A plan developed by the USFWS or NOAA–Fisheries, as required by 16 USC 35 (ESA), for the conservation, survival, and recovery of a listed species.

Recreational waters

Recreational waters are water bodies that are commonly used for recreational purposes. They include, but are not necessarily limited to, swimming pools, water parks, hot tubs, lakes, rivers, and the ocean.

Recycling

The process by which materials otherwise destined for disposal are collected, reprocessed, or remanufactured, and are reused. A distinction exists between onsite recycling (that is, where a waste is discharged from a process, but not from the installation, for recycling) and off-site recycling (that is, where the waste is transported from the generating activity to an off-site recycler).

Regional administrator

The regional administrator of the EPA regional office in which the subject property is located.

Regional Response Team (RRT)

A team of regional Federal representatives of the primary or selected advisory agencies. It acts within its region as an emergency response team that performs functions like those of the NRT.

Regulated tank

A tank constructed above, below, or on the ground, which is regulated by Federal or State authorities because it contains an oil or hazardous substance. Above ground tank requirements are found at 40 CFR 110, underground storage tank (UST) requirements at 40 CFR 280. Exceptions for heating oil tanks are found at 40 CFR 280.12. State regulations may be more stringent.

Release

A discharge of one or more hazardous substances into the environment by any means. Excluded are minor releases within the workplace, emissions from engine exhaust, and normal applications of fertilizer.

Reportable spill or event

A release of a reportable quantity of oil or hazardous substance into the environment. The EPA National Response Center (NRC) is to be notified immediately.

a. For oil (defined by 40 CFR 110): A discharge of such quantities of oil into or upon the navigable waters of the United States, its adjoining shorelines, or the contiguous zone so as to meet the qualifications listed in harmful discharge (of oil) into navigable waters or into or beyond the contiguous zone above.

b. For hazardous substances: Any release of one or more reportable substances in reportable quantities into the environment.

Response action

The cleanup or removal of released hazardous substances from the environment. This includes actions necessary in the event of the threat of release of hazardous substances into the environment; such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances; the disposal of removed material; or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release.

Resource recovery

A term describing the extraction and use of materials and energy from the waste stream. The term is sometimes used synonymously with energy recovery.

Restoration Advisory Board (RAB)

A RAB is a forum of representatives of the DOD, EPA, State and local government, and public representative(s) of the potentially affected community. RAB members can provide input to the Army's environmental restoration program (ERP) at both operating and closing or realigning installations. The RAB reflects the diverse makeup of the community, gives all stakeholders the opportunity to participate in the cleanup process, and make their views known to decision makers.

Reuse

A material is used or reused if it is either:

a. Used as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as a feedstock in another process).

b. Used in a particular function or application as an effective substitute (for example, spent battery acid accumulated by the DRMO could be used in industrial waste-water treatment facilities to precipitate phosphorous, and act as a sludge conditioner).

Risk assessment

Environmental risk assessment is the formal systematic evaluation of any environmental hazard that may pose a risk to human health or the environment. It may include an on-site investigation to determine the existence, nature, severity, and location of hazards and options for reducing the hazards.

Sacred site

Any site that traditional Native American religious leaders use for the practice of traditional Native American religions by their present-day adherents.

Secondary drinking water standards

Standards for those contaminants in drinking water, which may affect the aesthetic quality of the water, but have no adverse health effects. In the form of secondary maximum contaminant levels, these standards are not federally enforceable, but may be enforced by a State regulatory agency.

Senior mission commander (SMC)

The SMC will be a General Officer and designated by Senior Army Leadership. The SMC is responsible for the primary mission activity on several installations. The SMC provides executive level oversight of installation management services to the mission activities and other customers. The SMC need not reside or work on the installation. SMC installation management responsibilities are to:

a. Assist the GC in obtaining resources by advocating priority needs through the Army Commands (ACOMs), Army Service Component Commands (ASCCs), Direct Reporting Units (DRUs), and the IMBOD.

b. Act as the principal customer advocate to the IC and GC.

c. Approve the priorities for mission support, MCA projects, well-being programs and force protection requirements.

d. Provide overall force protection guidance.

e. Senior rate the GC.

Sewage sludge

Any solid, semi-solid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage.

Significant paleontological resources

Paleontological resources (i.e., fossil remains) associated with events that have made an important contribution to the broad pattern of history or the lives of persons who were of importance in the past, or that yield or may yield information that is important to history or pre-history.

Site

A physically defined location which can be supported by a legal boundary survey which closes a polygon. It can be owned, leased, or otherwise possessed or used. A site may exist in one of three forms: land only; facility or facilities only; or land and all the facilities on it. A site is the sum of all real property at a specific location.

Sludge

Any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).

Sole source aquifer

A groundwater source demonstrated to be the only or primary viable source of drinking water for a community or an aquifer that supplies 50 percent or more of the drinking water of an area.

Solid waste

Any discarded material that is not excluded by 40 CFR 261.4(a) or that is not excluded by variance granted under 40 CFR 260.30 and 260.31 (40 CFR 261.2).

Source reduction

Any practice which reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released to the environment prior to recycling, treatment, or disposal; or, any practice which reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants (Pollution Prevention Act (PPA) of 1990).

Source water

The water taken from rivers, reservoirs, or wells for use as drinking water.

Special installation

Special installations are generally very small, mostly industrial, and typically do not have a stand-alone installation staff. Command, control, manpower, and funding remain with the Army Commands (ACOMs), Army Service Component Commands (ASCCs), and Direct Reporting Units (DRUs), while traditional base operations support (BOS) oversight is provided by the IMCOM. These installations primarily use funds other than operation and maintenance funds (i.e., mission funds) to conduct traditional garrison operations in support of its primary mission. Several mission fund types are used in the operation of these installations, including: Army Working Capital Funds (AWCF); transportation working capital funds (TWCF); chemical program funds; Defense Health Program (DHP) funds; procurement Army ammunition (PAA) funds; and research, development, test, and evaluation (RDT&E) funds.

Special State (installation) license

A license prepared and issued by the installation in accordance with 10 USC 670 and the fish and wildlife cooperative plan to individuals participating in hunting, fishing, or trapping activities. It is valid only on the installation where issued. A fee is collected and used for fish and wildlife management activities in accordance with the integrated natural resources management plan (INRMP).

Species designations

The following species designations apply.

a. 16 USC Chapter 35 (ESA).

(1) Endangered species. Any species, plant or animal, which is in danger of extinction throughout all or a significant portion of its range, as listed by the U.S. Department of Interior (DOI).

(2) Threatened species. Any species, plant or animal, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, as listed by the DOI.

(3) Candidate species. Plant or animal taxa considered for possible addition to the List of T&E Species. These are taxa for which the USFWS has on file sufficient information on biological vulnerability and threats to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority actions.

b. State listed species. Any species, plant or animal, which is listed by the appropriate State as threatened or endangered within the State. (Note: these species may not be federally listed).

c. Species At Risk or Habitats. Plant and animal species and associated habitats that are not federally listed as

threatened or endangered under 16 USC Chapter 35 (ESA), but are either federally listed as candidates or are ranked by NatureServe as critically imperiled or imperiled throughout their range.

d. Army Species At Risk or Habitats. Species at risk or habitats that could be listed in the near future and/or for which the listing could have significant impact on military readiness and which are designated by HQDA.

Spill

A generic term, as used in this regulation, which encompasses the accidental and the deliberate but unpermitted discharge or release of a pollutant. For distinction, see discharge classifications, harmful discharge and so forth, potential discharge, release, and reportable spill or event. For comparison, see discharge and federally permitted release.

State historic preservation officer (SHPO) (under NHPA)

The official appointed or designated pursuant to section 101(b)(1) of the act to administer the State historic preservation program or a representative designated to act for the SHPO.

Status of Forces Agreement (SOFA)

Agreement on the stationing or operations of forces to which the United States is a party, such as:

- a.* Multilateral or bilateral stationing or base rights agreement.
- b.* Arrangements or understanding concluded there under.

Storage

The holding of hazardous substances (as defined in this section), other than for a temporary period of less than 30 days, prior to the hazardous substance being either used, neutralized, disposed of, or stored elsewhere.

Storage tank system

Storage tank systems include the tank(s), all connected piping, any ancillary equipment, and the containment system.

Sub-Installation

A grouping of facilities that are under the control of an installation garrison, but are not physically located within the principal installation boundary.

Surface water

All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, and so forth) and all springs, wells, or other collectors directly influenced by surface water.

Surveillance

Thorough inspections or surveys made before and after pest management treatments to determine the presence and prevalence of pests or disease vectors.

Sustainability

Meeting present needs without compromising the ability of future generations to meet their own needs.

Sustainable yield

The production of renewable resources a land or water area can maintain in perpetuity at a given intensity of management without impairment of the resource.

Take

Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

Tank

Any stationary device designed to contain an accumulation of used oil (40 CFR 279.1) or HW (260.10), oil (40 CFR 112 and 40 CFR 280.12) or regulated substance (40 CFR 280.12) which is constructed primarily of non-earthen materials (for example, wood, concrete, steel, plastic) which provides structural support.

Technical guide (TG)

Technical guidance prepared by the AFPMB on specific pest management and disease vector control topics. TMs are

available from the DOD AFPMB, Forest Glen Section, Walter Reed Army Medical Center, Washington, DC 20307-5001.

Technical Review Committee (TRC)

TRCs are established as required by CERCLA Section 211 to facilitate review and comment on response actions and proposed actions at Army installations. The Army establishes TRCs for installations where there is no community interest towards establishment of a RAB. Note, however, that the TRC is being replaced by the RAB where appropriate. Installations that already have TRCs should consider converting the committee to a RAB (see Restoration Advisory Board for additional information).

Tenant

An authorized activity located on an installation that is not part of the garrison organization. Tenants include, but are not limited to, military units, the Army and Air Force Exchange Service (AAFES), and the Defense Commissary Agency (DeCA).

Toxic chemical

A chemical listed in 40 CFR 372.65 or added to that list by the EPA and required to be reported yearly in the EPCRA Toxic Releases Inventory.

Toxic pollutant

Those pollutants or combinations of pollutants, including disease-causing agents which, after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will cause death; disease; behavioral abnormalities; cancer; generic mutations physiological malfunctions, including malfunctions in reproduction; or physical deformations in such organisms or their offspring.

Transfer

Reference AR 405-90. Change in jurisdiction over real property from one Federal agency or department to another, including military departments and defense agencies.

Treatment

Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any HW so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safe to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

Underground injection

Subsurface emplacement of fluids, often wastes, through a bored, drilled or driven well.

Undertaking

A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval.

Unexploded ordnance (UXO)

UXO are military munitions that:

- a. Have been primed, fused, armed, or otherwise prepared for action.
- b. Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material.
- c. Remain unexploded, either by malfunction, design, or any other cause. (10 USC 101(e)(5)).

Unintentional Take

As defined for migratory birds (Migratory Bird Treaty Act (MBTA)) - take, that results from, but is not the purpose of, the activity in question, take of this type is sometimes referred to as incidental or indirect.

Unit commander

A commissioned officer of the United States armed forces designated to command a military unit.

U.S. jurisdiction

The 50 states, the District of Columbia, the commonwealths of Puerto Rico and the Northern Mariana Islands, the

territories of Guam and American Samoa, the U.S. Virgin Islands, and any other territory or possession over which the United States has jurisdiction.

Vessel

Any type of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, other than a public vessel.

Vulnerability assessment

An assessment of elements in the community that are susceptible to damage if hazardous materials are released.

Waste minimization

Two definitions are:

a. Any source reduction or recycling activity that is undertaken by a generator that results in the reduction of the quantity of HW, or the reduction in toxicity of HW, that is either generated or subsequently treated, stored, or disposed of. Such activities must be consistent with the goals of minimizing present and future threats to human health and the environment.

b. A working definition of waste minimization reflects two types of activities, source reduction or elimination of waste at the point of generation (for example, within a process), and recycling.

Wastewater

The spent or used water from individual homes, a community, a farm, or an industry that contains dissolved or suspended matter.

Water conservation

The beneficial reduction of water uses or water losses.

Water resource

Any groundwater or surface water source and associated (lake or ocean) shoreline. See also surface water, and groundwater.

Watershed

A region or area bounded peripherally by a water parting and draining ultimately to a particular watercourse or body of water.

Waterworks permit

Any permit required to operate a drinking water treatment facility, such as a source water appropriation permit or an operating permit.

Weed

A plant growing where it is not desired.

Wellhead protection area

The surface and subsurface area surrounding a water well or well field supplying a public water system, through which contaminants are reasonably likely to move toward and reach such well or well field.

Wetlands

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Common terms used to describe various wetlands include marshes, bogs, swamps, small ponds, sloughs, potholes, river overflows, oxbows, mud flats, and wet meadows.

Wildland fire

Any non-structural fire that occurs on unimproved grounds. This includes wildfires and prescribed fires.

Wildlife management

The practical application of scientific and technical principles to wildlife populations and habitats so as to maintain such populations essentially for ecological, recreational, and/or scientific purposes.

Section III**Special Abbreviations and Terms**

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 Publicly-owned treatment works (POTWs), 4-2
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 Ranges – Munitions – see Munitions Use on Ranges
 Ranges, Testing, 4-3
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 Endangered Species, 16-4
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 Reuse, 1-25, 4-2, 6-4, 7-1, 10-1, 10-2, 12-4, 15-1, 16-3, B-4
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 Secretary of the Army, the (SA), 1-4, 1-5
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 Senior mission commander (SMC), 1-13, 1-23, 4-3, 10-1
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Stormwater, 4–2
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Surface Waters, 3–3, 4–2, 4–3
Surgeon General, The (TSG), 1–19
Survey – see Planning Level Surveys (PLSs)
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 Design and Development (SDD), 1–12, 1–13
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Technical Review Committee/Restoration Advisory Board (TRC/RAB), 1–25, 12–4
Technology – see Environmental Technology
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Toxic
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Transportation Equipment, 3–2
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US Army Corps of Engineers (USACE), 1–5, 1–12, 1–22, 4–2, 12–4
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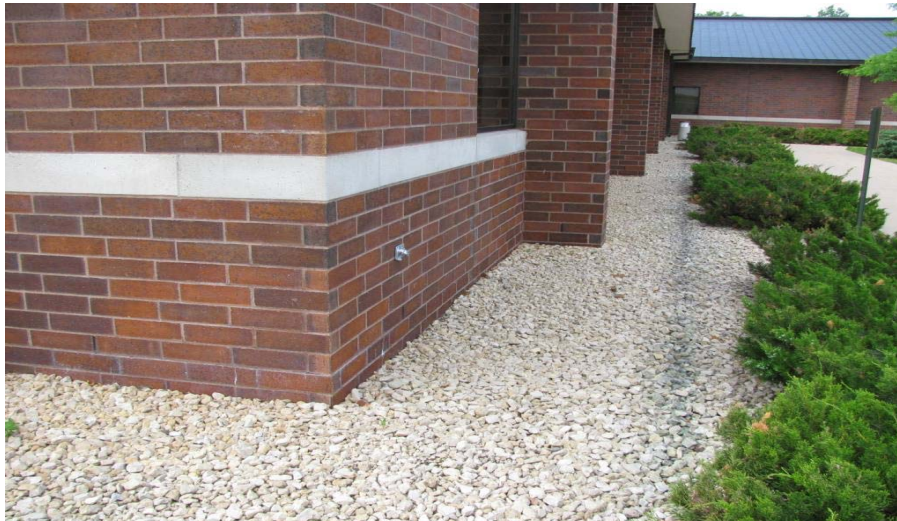
Appendix F

Conceptual Aesthetics Considerations

Fort McCoy Conceptual Aesthetic Considerations



Example 1 of Fort McCoy Existing Building Aesthetic



Example 2 of Fort McCoy Existing Building Aesthetic



Example 3 of Fort McCoy Existing Building Aesthetic



Example 4 of Fort McCoy Existing Building Aesthetic



Example 5 of Fort McCoy Existing Building Aesthetic



Example 6 of Fort McCoy Existing Building Aesthetic



Example 7 of Fort McCoy Existing Building Aesthetic



Example 8 of Fort McCoy Existing Building Aesthetic



Example 9 of Fort McCoy Existing Building Aesthetic

Appendix G
GIS Data

NA

Appendix H

Exterior Signage

EXTERIOR SIGNAGE for New Information Systems Facility

Provide Sign Type B4 to the exterior of the building in accordance with UFC 3-120-01 as illustrated below:

Figure 2.39. Military Building Entry Sign Placement.

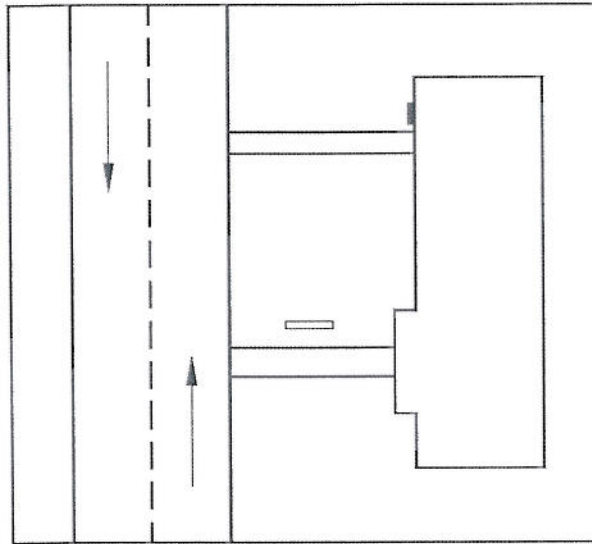
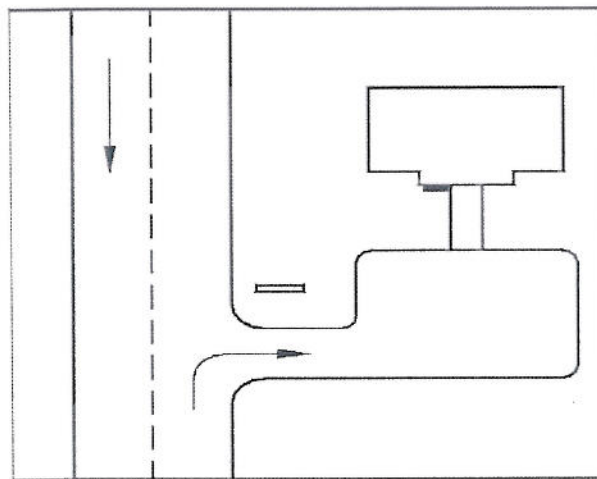


Figure 2.40. Military Building Entry Sign Visibility.

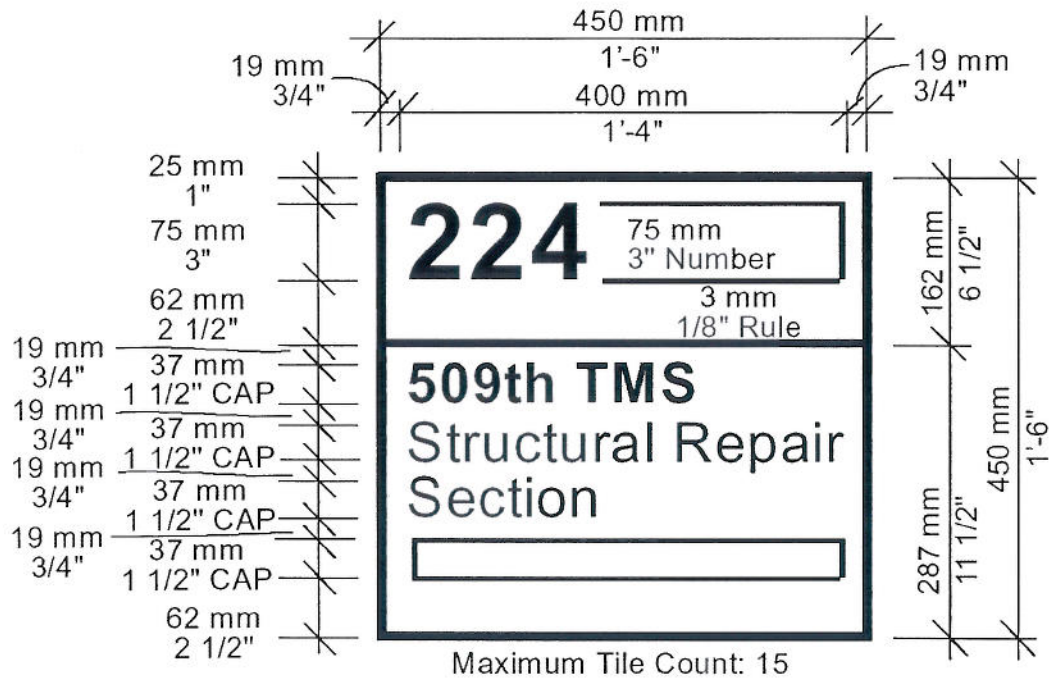


2.22. Military Building Entry Sign Type B4.

2.22.1. Placement. Place the Military Building Entry sign, Type B4, directly on the wall next to the secondary entry point. (Figure 2.39).

2.22.2. Visibility. If the building is set back from the roadway and is not visible or only partially visible from the roadway, place the sign next to the main entrance of the building to confirm the information shown on the Type B1, B2 or B3 sign placed at the entrance driveway (Figure 2.40).

Figure 4.23. Military Building Entry Sign Type B4 Expanded Layout.



Appendix I
Acceptable Plant List

NA

Appendix J
Drawings

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A. DEMOLITION OF BUILDINGS 1452, 1453, 1455, 1456, 1457 & 1458 AND ASSOCIATED PARKING LOTS & UTILITY SERVICES IS CURRENTLY UNDER CONTRACT TO BE COMPLETED BY OTHERS. WORK IS SCHEDULED TO BE COMPLETED PRIOR TO NOVEMBER 2010. COORDINATE WITH CONTRACTING OFFICER.

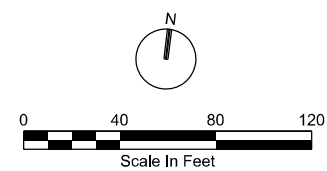
B. DEMOLITION OF BUILDING 1450 & ASSOCIATED UTILITY SERVICES WILL BE COMPLETED BY OTHERS IN THE FUTURE.

1 EXIST BLDG UNDER DEMOLITION

2 EXIST PVMNT UNDER DEMOLITION

3 EXIST UTILITY SERVICE TO BE
DEMOLISHED/ABANDONED

4 EXIST BLDG TO BE DEMOLISHED BY OTHERS



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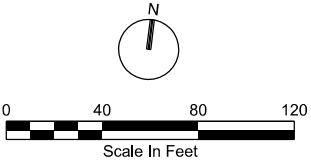
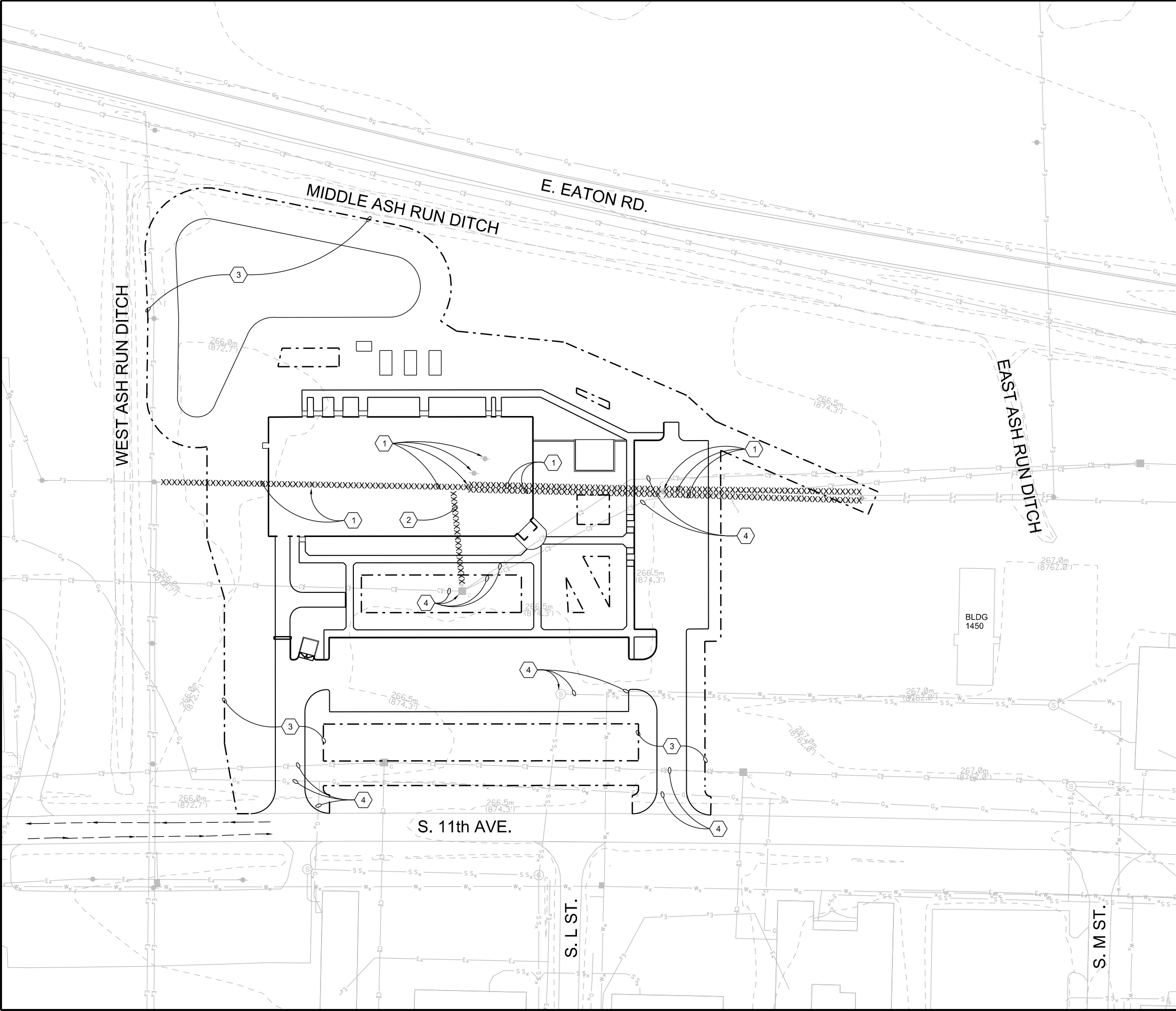
- GENERAL NOTES:
- A. RETAIN & PROTECT ALL EXIST UTILITIES UNLESS OTHERWISE SHOWN ON PLANS.
 - B. UTILITY SERVICES SHOWN ARE APPROXIMATE, FIELD VERIFY, COORDINATE WITH UTILITY LOCATING SERVICE & OBTAIN EXCAVATION PERMITS PRIOR TO BEGINNING WORK.
 - C. PROVIDE EROSION & SEDIMENT CONTROL PLAN FOR REVIEW & APPROVAL PRIOR TO BEGINNING CLEARING & DEMO ACTIVITIES.
 - D. CONTRACTOR SHALL VERIFY THAT SERVICES & CONNECTIONS TO NEIGHBORING FACILITIES REMAIN INTACT & UNINTERRUPTED.

- KEY NOTES:
- 1 EXIST PRIMARY OVERHEAD POWER TO BE RELOCATED BY XCEL ENERGY, CONTRACTOR TO COORDINATE
 - 2 DEMO / ABND EXIST COMM RUN
 - 3 APPROX LIMITS OF CLEARING & GRUBBING PER USGBC LEED SS CREDIT 5.1
 - 4 RETAIN & PROTECT EXIST UTILITY, ADJUST TO GRADE & IMPROVE TO TRAFFIC RATED IF REQ'D

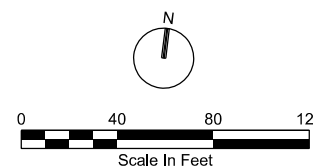
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USACE Louisville District	DESIGNED BY: CH2M HILL	FILE NUMBER:
322 East Front Street	DATE: JULY 2010	AS SHOWN: 7/9/2010
Boone, Idaho 83702	FILE NAME: 404432_10-C1-12.dgn	AS SHOWN: 7/9/2010

UNITED STATES ARMY CORPS OF ENGINEERS	CIVIL
LOUISVILLE DISTRICT	SITE DEMOLITION AND CLEARING
INFORMATION SYSTEMS FACILITY	
FT McCoy, WI	

SHEET IDENTIFICATION
C-1.2



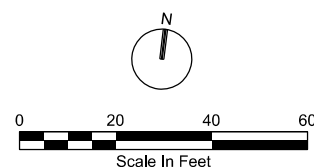
2 24' WIDE TEMP ACCESS GATE



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1 BASE BID WORK SHALL PROVIDE ASPHALT PAVING OF PARKING LOTS & ACCESS ROADS AS SHOWN, CONCRETE PAVING OF THESE AREAS SHALL BE PROVIDED AS AN OPTION.



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404432 ** SUPPORT VALUE ENGINEERING - IT PAYS **



12 FOUNDATION UNDERDRAIN CLEAN OUT TO GRADE



** SUPPORT VALUE ENGINEERING - IT PAYS ** 404

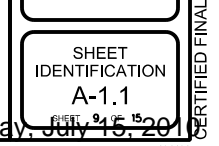
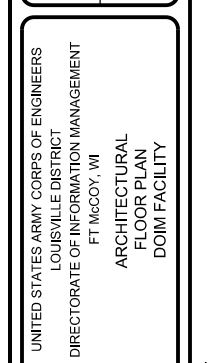
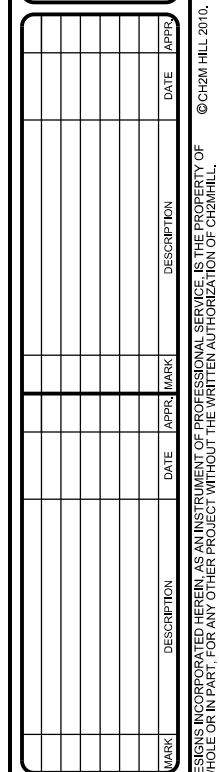
SHEET
IDENTIFICATION
C-1.5
SHEET 6 OF 15
v. July 15, 20

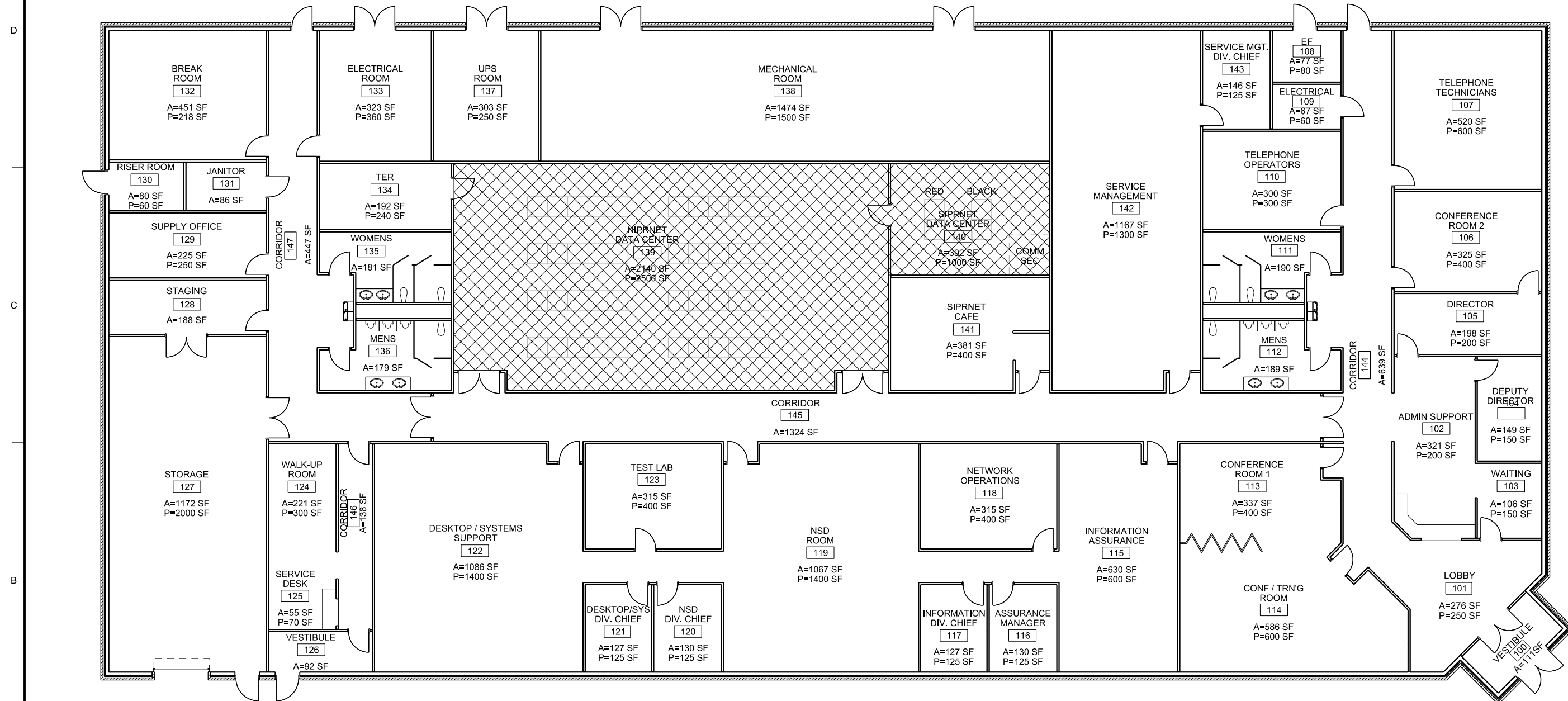
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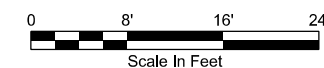


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LIMIT OF AREAS / ROOMS WITH ACCESS FLOORING.
RECESS SLAB FOR MIN. 24" ACCESS FLOOR ASSEMBLY.
TOP OF ACCESS FLOOR SHALL BE LEVEL WITH
ADJACENT CONCRETE SLABS.

$$\frac{1}{8}'' = 1'-0''$$




**US Army Corps
of Engineers®**
Louisville District

[illegible]

DESIGNED BY: JM	DATE: JUL 2010
J. MURPHY	
DWN BY: TP	SOLICITATION NO.: W912QR-10R-0060
D. MYERS	CONTRACT NO.: W912QR-09-D-0057
T PRICE	FILE NUMBER:
SUBMITTED BY: T SPELMANN	
PLOT SCALE:	PLOT DATE: 7/9/2010
AS SHOWN	FILE NAME:
SIZE: ANSID	404432_10a1-3.dgn

Armed Forces Reserve Center
USACE Louisville District
Ft. McCoy, WI

CH2MHILL

322 East Front Street
Boise, Idaho 83702

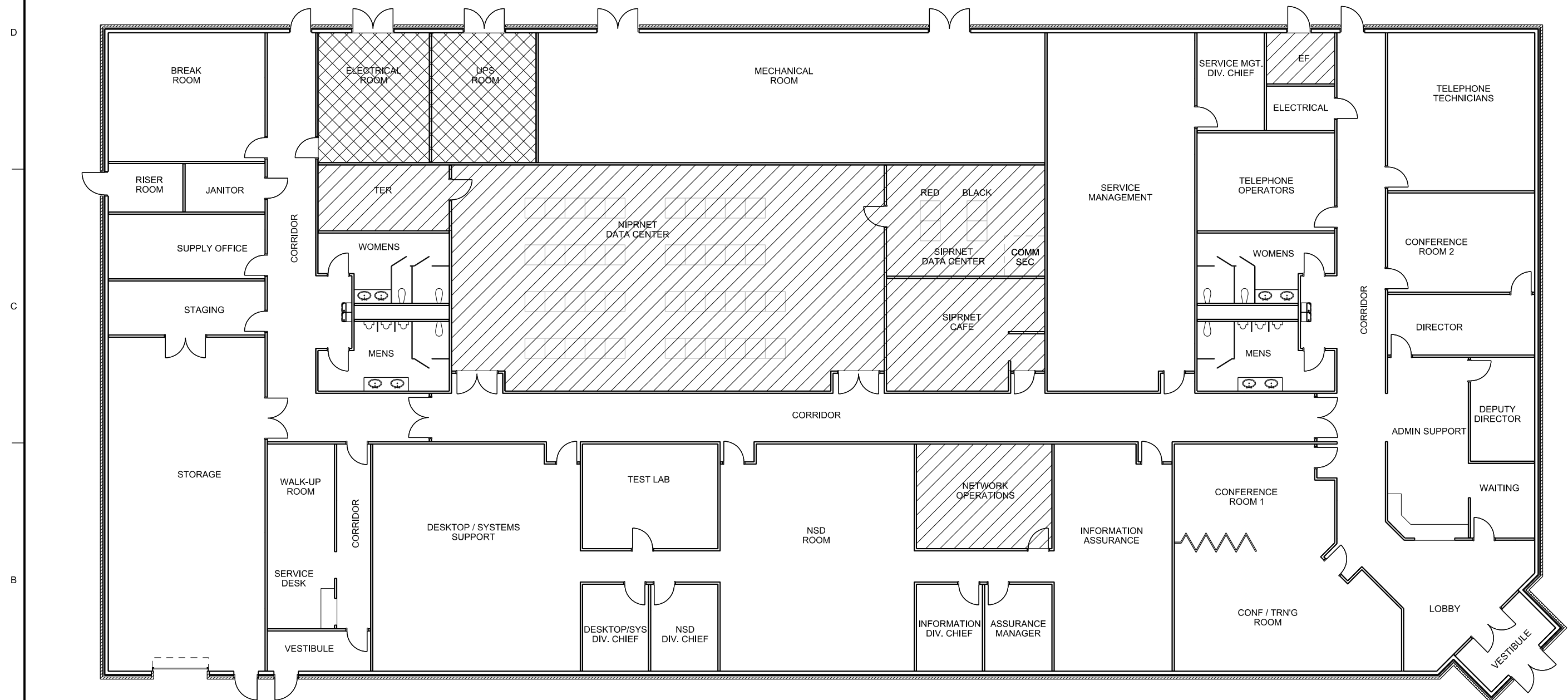
UNITED STATES ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT
DIRECTORATE OF INFORMATION MANAGEMENT
FT MCCOY, WI
ARCHITECTURAL
HVAC IMPACT PLAN
DOIM FACILITY

SHEET
IDENTIFICATION
A-1.3

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LEGEND



CRITICAL IMPACT AREAS, NO DUCT OR PIPING SHALL PASS THROUGH OR OVER THESE AREAS, EXCEPT DUCT OR PIPING SPECIFICALLY SERVING THE SPACE. ALL DUCT AND VENT OPENINGS SHALL BE SMALLER THAN A PERSON - PASSABLE 96 SQUARE INCHES, OR SHALL BE HARDENED IN ACCORDANCE WITH MILITARY HANDBOOK 1013/1A.



ALL PIPING SERVING OR PASSING ABOVE THE UPS AND ELECTRICAL ROOMS SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 70.

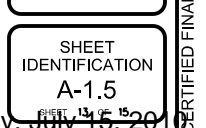
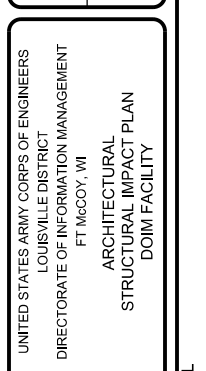
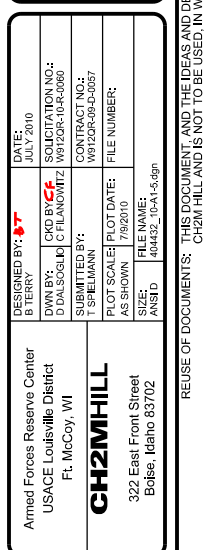
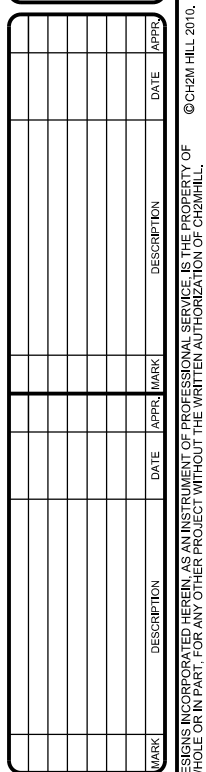
HVAC IMPACT PLAN

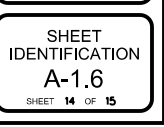
$$1/8'' = 1'-0''$$


0 8' 16' 24'

Scale In Feet

Thursday, July 15, 2010





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SCHEMATIC ONE-LINE DIAGRAM

Appendix K

Fuel Cost Information

APPENDIX K Fuel Cost Information

The following utility rates for this installation are provided for design

Electrical:

Demand Charge - \$.50 per kilowatt

Energy Charge - \$ 0.05 per kilowatt-hour Blended Rate - \$.075 per kilowatt-hour (blended annual energy and demand cost)

Natural Gas:

Commodity Charge Rate - \$.7418 per thousand cubic feet

Water:

Commodity Charge Rate - \$x.xx per [volume] Product on Fort McCoy is at no charge to the Fort

Sewer:

Commodity Charge Rate - \$x.xx per [volume] no charge

Purchased/Central Steam:

Commodity Charge Rate - \$x.xx per [unit of measure] no charge

Purchased High Temperature Water:

Commodity Charge Rate - \$x.xx per [unit of measure] no charge

Purchased Chilled Water:

Commodity Charge Rate - \$x.xx per [unit of measure] no charge

Appendix L
LEED® Checklist



LEED 2009 for New Construction and Major Renovation

Project Checklist

Project Name

Date

10	13	3	Sustainable Sites	Possible Points: 26
----	----	---	--------------------------	---------------------

Y	N	?
Y		
		1
	5	
	1	
	6	
	1	
	3	
	2	
		1
1		
1		
1		
		1
1		
1		
		1
1		
1		

Prereq 1	Construction Activity Pollution Prevention	
Credit 1	Site Selection	1
Credit 2	Development Density and Community Connectivity	5
Credit 3	Brownfield Redevelopment	1
Credit 4.1	Alternative Transportation—Public Transportation Access	6
Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
Credit 4.4	Alternative Transportation—Parking Capacity	2
Credit 5.1	Site Development—Protect or Restore Habitat	1
Credit 5.2	Site Development—Maximize Open Space	1
Credit 6.1	Stormwater Design—Quantity Control	1
Credit 6.2	Stormwater Design—Quality Control	1
Credit 7.1	Heat Island Effect—Non-roof	1
Credit 7.2	Heat Island Effect—Roof	1
Credit 8	Light Pollution Reduction	1

8	0	2	Water Efficiency	Possible Points: 10
---	---	---	-------------------------	---------------------

Y		
4		
		2
		4
		2
4		
		2
		3
		4

Prereq 1	Water Use Reduction—20% Reduction	
Credit 1	Water Efficient Landscaping	2 to 4
	Reduce by 50%	2
	X No Potable Water Use or Irrigation	4
Credit 2	Innovative Wastewater Technologies	2
Credit 3	Water Use Reduction	2 to 4
	Reduce by 30%	2
	Reduce by 35%	3
	X Reduce by 40%	4

10	23	2	Energy and Atmosphere		Possible Points:	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems		
Y			Prereq 2	Minimum Energy Performance		
Y			Prereq 3	Fundamental Refrigerant Management		
8	11		Credit 1	Optimize Energy Performance	1 to 19	
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1	
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2	
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3	
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4	
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5	
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6	
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7	
				X Improve by 26% for New Buildings or 22% for Existing Building Renovations	8	
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9	
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10	
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11	
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12	
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13	
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14	
				Improve by 40% for New Buildings or 36% for Existing Building Renovations	15	
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16	
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17	
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18	
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19	
	7		Credit 2	On-Site Renewable Energy	1 to 7	
				1% Renewable Energy	1	
				3% Renewable Energy	2	
				5% Renewable Energy	3	
				7% Renewable Energy	4	
				9% Renewable Energy	5	
				11% Renewable Energy	6	
				13% Renewable Energy	7	
		2	Credit 3	Enhanced Commissioning	2	
	2		Credit 4	Enhanced Refrigerant Management	2	
	3		Credit 5	Measurement and Verification	3	
2			Credit 6	Green Power	2	

7	7	0	Materials and Resources	Possible Points: 14
---	---	---	--------------------------------	----------------------------

Y			Prereq 1	Storage and Collection of Recyclables	
3			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
				Reuse 55%	1
				Reuse 75%	2
				Reuse 95%	3
1			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
				50% Recycled or Salvaged	1
				75% Recycled or Salvaged	2
2			Credit 3	Materials Reuse	1 to 2
				Reuse 5%	1
				Reuse 10%	2
2			Credit 4	Recycled Content	1 to 2
				10% of Content	1
				20% of Content	2
2			Credit 5	Regional Materials	1 to 2
				10% of Materials	1
				20% of Materials	2
1			Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

13	1	1	Indoor Environmental Quality	Possible Points: 15
----	---	---	-------------------------------------	----------------------------

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
		1	Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
	1		Credit 7.2	Thermal Comfort—Verification	1
1			Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

4	0	2	Innovation and Design Process		Possible Points: 6
1			Credit 1.1	Innovation in Design: Specific Title (WEc3 45% reduction in Water Use)	1
1			Credit 1.2	Innovation in Design: Specific Title (EAc6 Purchase 100% Renewable Engery)	1
1			Credit 1.3	Innovation in Design: Specific Title (MRc4 30% Recycled Content)	1
		1	Credit 1.4	Innovation in Design: Specific Title	1
		1	Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1
3	0	1	Regional Priority Credits		Possible Points: 4
1			Credit 1.1	Regional Priority: Specific Credit (Achieve WEc1opt2)	1
1			Credit 1.2	Regional Priority: Specific Credit (Achieve WEc3 (30% reduction)	1
1			Credit 1.3	Regional Priority: Specific Credit (Achieve MRc2 (75% waste reduction)	1
		1	Credit 1.4	Regional Priority: Specific Credit	1
55	44	11	Total		Possible Points: 110
Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110					

Appendix M

Owner's Project Requirements for LEED®

04 MAY 10

Appendix M

Owner's Project Requirements Document for LEED Fundamental Commissioning

Project: _____

Approved: _____

_____	_____	_____
Name	Owner's Representative	Date
_____	_____	_____
Name	Design Agent's Representative	Date

Overview and Instructions

The purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance.

The Owner's Project Requirements Document is a required document for LEED-NC EA Prerequisite Fundamental Commissioning of the Building Energy Systems. It shall be completed by the Corps District/Design Agent based on coordination with the Installation/User/Proponent and shall be approved by the Installation/User/Proponent representative.

The intent of the Owner's Project Requirements Document is to detail the functional requirements of a project and the expectations of the building's use and operation as it relates to commissioned systems. This template contains the basic recommended components indicated in the LEED Reference Guide. It should be adapted as needed to suit the project, remaining reflective of the LEED intent.

The Owner's Project Requirements Document should ideally be completed before the start of design and furnished to the design team. It must be completed prior to the approval of Contractor submittals of any commissioned equipment or systems to meet LEED requirements.

Updates to the Owner's Project Requirements Document throughout the course of project delivery shall be made by the Corps District/Design Agent based on decisions and agreements coordinated with and agreed to by the Installation/User/Proponent.

The Owner's Project Requirements Document shall be included in the project's LEED documentation file under EA PR1, Fundamental Commissioning of the Building Energy Systems.

04 MAY 10

Owner's Project Requirements Document for LEED Fundamental Commissioning

Table of Contents

1. Owner and User Requirements
 - Primary Purpose, Program and Use
 - Project History
 - Broad Goals
2. Environmental and Sustainability Goals
 - Energy Efficiency Goals
 - General
 - Siting
 - Building Façade
 - Building Fenestration
 - Building Envelope
 - Roof
 - Other
3. Indoor Environmental Quality Requirements
 - Intended Use
 - Occupancy Schedule
 - Accommodations for After-Hours Use
 - Lighting, Temperature, Humidity, Air Quality, Ventilation, Filtration
 - Acoustics
 - Occupant Ability to Adjust System Controls
 - Types of Lighting
4. Equipment and Systems Expectations
 - Space Heating
 - Ventilation
 - Air Conditioning
 - Refrigeration
 - HVAC Controls
 - Domestic Hot Water
 - Lighting Controls
 - Daylighting Controls
 - Emergency Power
 - Other
5. Building Occupant and O&M Personnel Requirements
 - Facility Operation
 - EMCS
 - Occupant Training and Orientation
 - O&M Staff Training and Orientation

TABLE 1

04 MAY 10

1. Owner and User Requirements

What is the primary purpose, program and use of this project? (example: office building with data center)

Describe pertinent project history. (example: standard design development)

Broad Goals

What are the broad goals relative to program needs?

What are the broad goals relative to future expansion?

What are the broad goals relative to flexibility?

What are the broad goals relative to quality of materials?

What are the broad goals relative to construction costs?

What are the broad goals relative to operational costs?

Other broad goals: *(Insert as applicable)*

04 MAY 10

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (example: LEED Silver rating)

What are the project goals relative to energy efficiency? (example: Meet EPACT)

What are the project goals and requirements for building siting that will impact energy use?

What are the project goals and requirements for building facade that will impact energy use?

What are the project goals and requirements for building fenestration that will impact energy use?

What are the project goals and requirements for building envelope that will impact energy use?

What are the project goals and requirements for building roof that will impact energy use?

Other: *(Insert as applicable)*

04 MAY 10

3. Indoor Environmental Quality Requirements

What is the intended use for all spaces? For all spaces that have an intended use that is not readily apparent from the space name, provide this information in Table 1.

What is the anticipated occupancy schedule (numbers of occupants and time frames) for all occupied spaces? Indicate the default occupancy schedule below and for all spaces that have an occupancy schedule that differs from the default, provide this information in Table 1.

What accommodations for after-hours use are required? (example: access control, lighting controls, HVAC controls) Indicate general accommodations required below and for all spaces that have special requirements, provide this information in Table 1.

What are the lighting, temperature, humidity, air quality, ventilation and filtration requirements for all spaces? Indicate the default requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

Lighting: _____

Temperature: _____

Humidity: _____

Air Quality: _____

Ventilation: _____

Filtration: _____

What are the acoustical requirements for all spaces? Indicate the default acoustical requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

What is the desired level of occupant ability to adjust systems controls? Indicate the default desired levels below and for all spaces that have a desired level that differs from the default, provide this information in Table 1.

Lighting: _____

04 MAY 10

Temperature: _____

Humidity: _____

Air Quality: _____

Ventilation: _____

What, if any, specific types of lighting are desired? (example: fluorescent in 2x2 grid, accent lighting, particular lamps)

4. Equipment and System Expectations

(Complete for each category as applicable or indicate "none identified" or "N/A". Add desired features information for other anticipated commissioned systems as applicable)

Indicate desired features for the following commissioned system: Space Heating

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Ventilation

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Air Conditioning

04 MAY 10

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Refrigeration

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: HVAC Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Domestic Hot Water

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

04 MAY 10

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Lighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Daylighting Controls

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Emergency Power

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

04 MAY 10

Indicate desired features for the following commissioned system: Other - _____

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

5. Building Occupant and O&M Personnel Requirements

How will the facility be operated? Who will operate the facility?

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling)

What is the desired level of training and orientation for building occupants to understand and use the building systems?

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems?

Table 1

Space	Use / Activity	Num of Occs	Special Occupancy Schedule	After Hours Use Reqmt.	Special Cooling Reqmt.	Special Heating Reqmt.	Special Humidity Reqmt.	Special Ventil./Filtration Reqmt.	Special Acoustic Reqmt.	Special Lighting Reqmt.	Special Occup Adjustability Reqmt.

APPENDIX N
LEED Requirements for Multiple Contractor Combined Projects

Not Used

APPENDIX O
LEED Strategy Tables

Not Used

APPENDIX P

LEED Registration of Army Projects

15 April 2010

Number of Registrations

Each building must be registered separately, except multiple instances of a standard building on a shared site may be registered as a single project. If a single registration for multiple buildings is chosen, all buildings under the single registration must earn exactly the same points. Do not register buildings that are exempt from a specific LEED achievement requirement.

Typical Registration Procedure

1. Login, complete the online registration form (see guidance below) at the GBCI LEED Online website <http://www.gbci.org/DisplayPage.aspx?CMSPageID=174> and submit it online.
2. Pay the registration fee via credit card (USACE staff: credit card PR&C is funded by project design or S&A funds).
3. GBCI will follow up with a final invoice, the LEED-online passwords and template information.
4. The individual who registers the project online is, by default, the Project Administrator.

Completing the Registration Form

BEFORE YOU BEGIN:

Create a personal account with USGBC if you do not have one.

You will need the following information:

Project name as it appears in P2 (obtain from USACE Project Manager)

Building number/physical address of project

Zip code for Installation/project location

Anticipated construction start and end dates

Total gross area all non-exempt buildings in registration

Total construction cost all non-exempt buildings only (see Project Details Section instructions below)

ACCOUNT/LOGIN INFORMATION

1. The person registering the project **must have an account with USGBC** (login and password) to complete the form. Go to <http://www.gbci.org/>, click on "register a project" at the drop-down menu for project certification (at the top of the page) and select "register now for LEED 2009" to start the project registration process. If you have an account, login with your email address and password and select "register new project" to proceed. If you do not have an account, you may select "register a new account" and follow the instructions. It is recommended that you create an account separately on the USGBC website before you start the form. IMPORTANT: USACE team members are members of USGBC and are eligible for Member prices. USACE team members registering projects should be sure to include the USACE Corporate Access ID in their personal account profile (if you do not have it contact richard.l.schneider@usace.army.mil or judith.f.milton@usace.army.mil for the number).
2. The Account/Login Information section is filled out by the person registering the project. It may be a Contractor or a USACE staff member.

ELIGIBILITY SECTION

Follow directions (accepting the terms and conditions)

Review your profile information and make corrections if needed

RATING SYSTEM SELECTION SECTION

Select single project registration and I know which rating system.

Select the rating system - currently only LEED-NC and LEED for Homes are approved for Army use without special approval.

LEED Minimum Program Requirements: select YES

Thursday, July 15, 2010

RATING SYSTEM RESULTS SECTION

Confirm selected rating system.

PROJECT INFORMATION SECTION

Project Title: Begin the project title with a one-word identifier for the Installation. Do not include the word "Fort". After this match the project name used in P2 (contact the USACE Project Manager for this information) and identify the building being registered. Example: "Stewart 4th IBC - DFAC".

Project Address 1 and 2: This is the physical location of the project. Provide building number, street address, block number or whatever is known to best describe the location of the project on the Installation.

Project City: Installation Name

State, Country, Zip Code: Self-explanatory

Anticipated Construction Start and End Dates: Self-explanatory – give your best guess if unknown. Note that required data entry format is: 1 or 2 digit month/1 or 2 digit date/4 digit year (example 3/23/2010)

Gross Square Footage: Provide total area all buildings in LEED project. Exclude the area of any buildings that are exempt from the LEED achievement requirement (for example, exclude an unconditioned storage shed to be constructed with a barracks complex).

Is Project Confidential: Indicate NO except, if project has security sensitivity (elements that are FOUO or higher security), indicate YES.

Notification of Local Chapter: Indicate NO unless Government/USACE Project Manager requests you to indicate YES.

Anticipated Project Type: Select the most appropriate option from the drop-down menu.

Anticipated Certification Level: Select the applicable option from the drop-down menu (Silver is the usual level).

PROJECT OWNER INFORMATION SECTION

Project Owner First Name, Last Name, email, phone, address: The Project Owner is the USACE Project Manager. Obtain this info from the USACE Project Manager.

Organization: U.S. Army Corps of Engineers. This field MUST be completed this way because it will be used as a search field by higher HQ to find all USACE registered projects. You may supplement it with district name at the end but DO NOT revise or use an acronym.

May we publish Owner information: Indicate NO

Owner Type: Pick Federal Government from drop-down menu.

Project Owner Assertion: Check the box

PAYMENT INFORMATION

Self-explanatory

APPENDIX Q
REV 1.1 – 31 MAY 2009
AREA COMPUTATIONS

Computation of Areas: Compute the "gross area" and "net area" of facilities (excluding family housing) in accordance with the following subparagraphs:

(1) Enclosed Spaces: The "gross area" is the sum of all floor spaces with an average clear height $\geq 6'-11"$ (as measured to the underside of the structural system) and having perimeter walls which are $\geq 4'-11"$. The area is calculated by measuring to the exterior dimensions of surfaces and walls.

(2) Half-Scope Spaces: Areas of the following spaces shall count as one-half scope when calculating "gross area":

- Balconies
- Porches
- Covered exterior loading platforms or facilities
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps
- Interior corridors (Unaccompanied Enlisted Personnel Housing Only)

(3) Excluded Spaces: The following spaces shall be excluded from the "gross area" calculation:

- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3'-0" from the exterior face of the building to the fascia

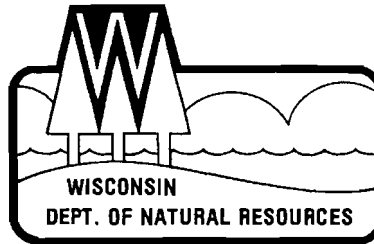
(4) Net Floor Area: Where required, "net area" is calculated by measuring the inside clear dimensions from the finish surfaces of walls. If required, overall "assignable net area" is determined by subtracting the following spaces from the "gross area":

- Basements not suited as office, special mechanical, or storage space
- Elevator shafts and machinery space
- Exterior walls
- Interior partitions
- Mechanical equipment and water supply equipment space
- Permanent corridors and hallways
- Stairs and stair towers
- Janitor closets
- Electrical equipment space
- Electronic/communications equipment space

RMS SUBMITTAL REGISTER INPUT FORM			CONTRACT NUMBER		DELIVERY ORDER																				
TITLE AND LOCATION																									
Button	<-----Right click for Instructions		TYPE OF SUBMITTAL								CLASSIFICATION				REVIEWING OFFICE										
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	01 - PRECON SUBMITTALS	02 - SHOP DRAWINGS	03 - PRODUCT DATA	04 - SAMPLES	05 - DESIGN DATA	06 - TEST REPORTS	07 - CERTIFICATES	08 - MFRS INSTRUCTIONS	09 - MFRS FIELD REPORT	10 - O&M DATA	11 - CLOSEOUT SUBMITTALS	FO - FOR INFORMATION ONLY	GA - GOVERNMENT APPROVED	DA - DESIGNER OF RECORD APPROVAL	CR - CONFORMANCE REVIEW	DA / CR	DA / GA	DO - DISTRICT OFFICE	AO - AREA OFFICE	RO - RESIDENT OFFICE	PO - PROJECT OFFICE	DR - DESIGNER OF RECORD	AE - ARCHITECT / ENGINEER
00 72 00	52.236-13	Accident Prevention Plan	X													X				X					
00 73 00	1.11	Dev. From Accept. Design. No Deviation from Contract					X										X			X				X	
00 73 00	1.11	Dev. From Accepted Design - Deviates from Contract					X											X		X				X	
00 73 00	1.17	Supplemental Price Breakdown	X											X						X					
00 73 00	1.18	SSHO Qualifications	X												X					X					
01 10 00	5.2.3.1	(if concrete pavement) Joint Layout Plan with design drawings					X									X									
01 10 00	5.5.2	Building Envelope Sealing Performance Testing						X						X						X					
01 10 10	***	Tests as Req by Codes - DOR Develops Test Program						X						X						X				X	
01 10 00	5.8.3	BAS Review Information		X													X			X				X	
01 10 00	5.8.3	BAS Performance Verification Test						X						X						X				X	
01 10 00	5.8.4	Testing Adjusting and Balancing						X						X						X				X	
01 10 00	5.8.5	Commissioning						X						X						X				X	
01 10 00	6.15	Environmental As Required for Site Specific					X									X				X				X	
01 10 00	6.16	Permits as required for Site specific					X									X				X				X	
01 10 00	5.10.2	Fire Protection Tests						X	X					X						X				X	
01 32 01.00 10	3.4.1	Preliminary Project Schedule	X												X					X					
01 32 01.00 10	3.4.2	Initial Project Schedule	X												X					X					
01 32 01.00 10	3.4.3	Design Package Schedule	X												X					X					
01 32 01.00 10	3.6.1	Periodic schedule updates from the Contractor	X												X					X					
01 32 01.00 10	3.7	Time Extension Request (Schedule)	X												X					X					
01 33 00	1.8	Submittal Register - DOR Input Required	X												X					X				X	
01 33 00	1.8	Submittal Register Updates (Design Packages, etc.)	X												X					X				X	
01 33 00	1.3.1	Substitution of Manuf or Model Named in Proposal		X	X												X			X				X	
01 33 16	1.2	Identify Designer(s) of Record	X												X					X					
01 33 16	1.1.2 / 3.2.4	Fast Track Design Package(s)					X									X				X					
01 33 16	1.2	Identification of all Designers of Record	X													X				X					
01 33 16	3.2.1	Site and Utility Des Package, incl. Substantiation					X									X				X					
01 33 16	3.2.2/3.5	Interim Des Subm Package(s), incl. Substantiation					X									X				X					
01 33 16	3.5.1	Drawings					X									X				X					
01 33 16	3.5.2.2	Sitework Design Analyses					X									X				X					
01 33 16	3.5.2.3	Structural Design Analyses					X									X				X					
01 33 16	3.5.2.4	Security Design Analyses					X									X				X					
01 33 16	3.5.2.5	Architectural Design Analyses					X									X				X					
01 33 16	3.5.2.6	Mechanical Design Analyses					X									X				X					
01 33 16	3.5.2.7	Life Safety Design Analyses					X									X				X					
01 33 16	3.5.2.8	Plumbing Design Analyses					X									X				X					
01 33 16	3.5.2.9	Elevator Design Analyses (as Applicable)					X									X				X					
01 33 16	3.5.2.10	Electrical Design Analyses					X									X				X					
01 33 16	3.5.2.11	Telecommunications Design Analyses					X									X				X					
01 33 16	3.5.2.12	Cathodic Protection Design Analyses					X									X				X					
01 33 16	3.5.3	Geotechnical Investigations and Reports					X									X				X					
01 33 16	3.5.4	LEED Submittals					X									X				X					
01 33 16	3.5.5	Energy Conservation Documentation					X									X				X					
01 33 16	3.5.6	Specifications					X									X				X					
01 33 16	3.5.7	Building Rendering					X									X				X					
01 33 16	3.2.4/3.7	Final Des Submittal Package(s), incl. Substantiation					X									X				X					
01 33 16	3.7.5	DD Form 1354 (Transfer of Real Property)										X				X				X					
01 33 16	3.2.5/3.8	Design Complete Submittal Package(s)					X									X				X					
01 33 16	3.3.3	Design and Code Review Checklists					X									X				X					
01 33 16	A-2.0	SID - Interim and Final (as applicable)			X	X	X								X					X					
01 33 16	B-2.0	FFE (as Applicable)					X								X					X					
01 45 04.00 10	3.2	Design and Construction QC Plan	X													X				X					
01 57 20.00 10	1.2	Environmental Protection Plan	X													X				X					
01 78 02.00 10	1.2.1	Final as-Built Drawings										X			X										
01 78 02.00 10	1.2.3.11	Non-Hazardous Solid Waste Diversion Reports						X						X						X					
01 78 02.00 10	1.2.7	Provide final as-built CADD and BIM Model files										X		X						X					
01 78 02.00 10	1.2.9	Provide scans of all other docs in Adobe.pdf format										X		X						X					
01 78 02.00 10	1.3.1	Equip-in-Place list of all installed equip and cost										X		X						X					
01 78 02.00 10	1.3.2	Data on equip not addressed in O&M manuals										X		X						X					
01 78 02.00 10	1.3.3	Final as-built specs - electronic files										X		X						X					
01 78 02.00 10	1.4.2.1	Warranty management plan - FAR 52.246-21										X		X						X					
01 78 02.00 10	1.4.2.1	Certificates of Warranty for extended warranty items										X		X						X					
01 78 02.00 10	1.4.2.1	Contractor's POCs for implementing warranty process										X		X						X					
01 78 02.00 10	1.4.2.1	List of each warranted equip, item, feature or system										X		X						X					
01 78 02.00 10	1.5	See also Section 01 10 00 par. 5.8.4 and 5.8.5										X		X						X					
01 78 02.00 10	1.6.1.2	Equipment O&M Manuals - 1 electronic / 2 hard copies										X		X						X					
01 78 02.00 10	1.7	Field Training DVD Videos									X			X						X					
01 78 02.00 10	1.8	Pricing of CF/CI and GF/CI Property										X		X						X					
01 78 02.00 10	1.11	List of Completed Cleanup Items										X				X				X					

Appendix AA

WDNR Project Permit Application



***STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES***

**GENERAL PERMIT TO DISCHARGE UNDER THE
WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM
WPDES Permit No. WI-S067831-3**

In compliance with the provisions of ch. 283, Wis. Stats., and chs. NR 151 and 216, Wis. Adm. Code, landowners engaged in land disturbing construction activities including clearing, grading and excavating activities are permitted to discharge


CONSTRUCTION SITE STORM WATER RUNOFF

to waters of the state in accordance with the conditions set forth in this permit.

Unless notified by the Department of Natural Resources to the contrary, the effective date of coverage under this permit is 14 working days after an applicant's Notice of Intent (NOI) has been received by the Department of Natural Resources.

Permit coverage for any project terminates upon submittal of a Notice of Termination. For NOIs submitted to the Department of Natural Resources, **the maximum period of permit coverage for any project is limited to 3 years per Notice of Intent.** Therefore, permit coverage terminates unless another NOI including application fee is submitted to retain coverage under this permit or a reissued version of this permit.

State of Wisconsin Department of Natural Resources
For the Secretary

By 
Russ Rasmussen, Director
Bureau of Watershed Management
Division of Water


Date Permit Signed/Issued

EXPIRATION DATE: September 30, 2011

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5. STANDARD CONDITIONS	19
6. DEFINITIONS	23

1. APPLICABILITY CRITERIA

1.1 Eligibility

1.1.1 Subject to the provisions of sections 1.1.3, 1.1.4 and 1.2.1 through 1.2.4:

1.1.1.1 This general Wisconsin Pollutant Discharge Elimination System (WPDES) permit is applicable to all new and existing storm water discharges from land disturbing construction activity occurring after the effective date of this permit until permit coverage is terminated in accordance with section 2.9 or automatically terminates under section 2.10. Industrial, commercial, residential, and governmental construction activities eligible for coverage by this permit are those that involve clearing and grubbing, grading, excavation and other land disturbing activities of one acre or more. This permit also is applicable to discharges of pit/trench dewatering at these sites. Examples of some dewatering activities that may be regulated by this permit include dewatering of construction pits, sewer extension construction, pipe trenches, and other similar operations.

1.1.1.2 The Department may require the landowner of any storm water discharge associated with land disturbing construction activity to apply for and obtain a storm water discharge permit if the storm water discharge is contributing to the violation of a water quality standard or contributing significant pollution to waters of the state.

1.1.2 This permit authorizes storm water discharges from land disturbing construction activities that may become mixed with other storm or wastewater discharges. Other storm or wastewater discharges are not authorized under this permit and may require coverage under another general or individual WPDES permit.

1.1.3 Storm water discharges associated with industrial activity that are subject to an industrial storm water WPDES permit or which are issued an individual WPDES construction site storm water discharge permit are not authorized by this permit. For example, non-metallic mining is an industrial activity that includes land disturbance as a normal part of its operation and such land disturbance is regulated under the industrial storm water permit. If an industrial facility underwent construction or expanded its operations and land disturbance is not a normal part of its operations, then coverage under this permit would be applicable.

1.1.4 This general permit does not apply to construction sites otherwise eligible for this permit where the Wisconsin Department of Natural Resources (the Department) determines, pursuant to s. NR 216.53(3), Wis. Adm. Code, that coverage under an individual WPDES storm water discharge permit is more appropriate. The Department may require individual permit coverage for storm water discharge from a construction site otherwise eligible for this permit if any of the following occur:

1.1.4.1 The storm water discharge from a construction site is determined to be a significant source of pollution and more appropriately regulated by an individual WPDES storm water discharge permit.

1.1.4.2 The storm water discharge from a construction site is not in compliance with the terms and conditions of this general permit or subch. III of ch. NR 216, Wis. Adm. Code.

1.1.4.3 A change occurs in the availability of demonstrated technology or BMPs for the control or abatement of pollutants from the storm water discharge.

1.1.4.4 Effluent limitations or standards are promulgated for a storm water discharge from the construction site different from the conditions contained in ch. 216, Wis. Adm. Code.

1.2 Exclusions

The following are not eligible for coverage under this permit:

1.2.1 Storm water discharges from Indian activities within Indian Country.

Note: Permit coverage is required from the United States Environmental Protection Agency for construction site storm water discharges within Indian County and information on such permitting is available at: <http://cfpub1.epa.gov/npdes/stormwater/cgp.cfm>.

1.2.2 Land disturbing construction activity and associated storm water discharges that affect wetlands, unless the Department determines that the land disturbing construction activity and associated storm water discharges comply with the wetland water quality standards provisions in ch. NR 103, Wis. Adm. Code.

1.2.3 Land disturbing construction activity and associated storm water discharges that affect endangered and threatened resources, unless the Department determines that the land disturbing construction activity and associated storm water discharges comply with the endangered and threatened resource protection requirements of s. 29.604, Wis. Stats., and ch. NR 27, Wis. Adm. Code.

1.2.4 Land disturbing construction activity and associated storm water discharges that affect any historic property that is listed property, or on the inventory or on the list of locally designated historic places under s. 44.45, Wis. Stats., unless the Department determines that the land disturbing construction activity and associated storm water discharges will not have an adverse effect on any historic property pursuant to s. 44.40 (3), Wis. Stats.

1.3 Authorization

1.3.1 A landowner planning a land disturbing construction activity of one acre or more must submit a completed Notice of Intent (NOI) to the Department or to an authorized local program in accordance with the requirements of section 2.1 of this permit to be authorized to discharge storm water under this permit. The Department will maintain a list of "authorized local programs" on its Internet site via: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm> or this information can be obtained by contacting the Department storm water program at (608) 267-7694.

1.3.2 Only a landowner or person who becomes a qualified landowner, and who submits an NOI in compliance with section 2. of this permit is authorized to discharge storm water from a land disturbing construction activity of one acre or more under the terms and conditions of this permit, except as provided in sections 1.3.3 and 1.3.4.

1.3.3 Owners of construction sites with land disturbing construction activity of one acre or more for public buildings and buildings that are places of employment that may have storm water discharges regulated by the Wisconsin Department of Commerce pursuant to s. 101.1205, Wis. Stats., in a manner which the Department of Natural Resources determines is equivalent to the requirements in subch. III of ch. NR 216, Wis. Adm. Code, are deemed to hold coverage under this permit upon filing an NOI with the Wisconsin Department of Commerce or a municipality

certified by the Wisconsin Department of Commerce as their agent to accept NOIs, and shall comply with this permit.

1.3.4 Owners of construction sites with land disturbing construction activity of one acre or more for one- and two-family dwellings that may have storm water discharges regulated by the Wisconsin Department of Commerce pursuant to s. 101.653, Wis. Stats., in a manner which the Department of Natural Resources determines is equivalent to the requirements in subch. III of ch. NR 216, Wis. Adm. Code, are deemed to hold coverage under this permit upon filing an NOI with a municipality or a registered UDC inspection agency administering and enforcing regulations pursuant to s. 101.653, Wis. Stats., and shall comply with this permit.

Note: Pursuant to s. 30.2022, Wis. Stats., storm water discharges from transportation construction projects directed and supervised by the Wisconsin Department of Transportation (WisDOT) are exempt from coverage under a Department storm water permit, which is issued pursuant to s. 283.33, Wis. Stats., if the projects are in compliance with ch. Trans 401, Wis. Adm. Code, and the WisDOT – Department liaison cooperative agreement.

1.3.5 Storm water discharges from land disturbing construction sites that are regulated, reviewed and approved by other Department programs and meet the requirements of subch. III of ch. NR 216, Wis. Adm. Code, shall be deemed to be covered by this permit and shall comply with the conditions of this permit.

Note: Construction sites covered under section 1.3.4 may include, but are not limited to, new landfill developments, expansions of existing approved landfills, sewer extensions, and wastewater treatment plants.

1.4 Water Quality Standards

1.4.1 This permit specifies the conditions under which storm water may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105 and NR 140, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to general narrative-type storm water discharge limitations and implementation of the erosion control and storm water management plans.

1.4.2 This permit does not authorize storm water discharges that the Department, prior to authorization of coverage under this permit, determines will cause or have reasonable potential to cause or contribute to an excursion above any applicable water quality standard. Where such determinations have been made prior to authorization, the Department may notify the applicant that an individual permit application is necessary. However, the Department may authorize coverage under this permit where the erosion control and storm water management plans required under this permit will include appropriate controls and implementation procedures designed to bring the storm water discharge into compliance with water quality standards.

1.5 More than One General Permit Can Apply

This permit may be issued to existing holders of general or individual WPDES permits, resulting in multiple WPDES permits for some sites. Facilities having other permits which do not regulate storm water discharges from land disturbing construction activities shall be subject to this permit when construction activities will disturb one acre or more of land at the site. However, storm water discharges from land disturbing construction activity associated with the normal operation of an industrial facility does not require coverage under this permit when it is regulated under an industrial storm water permit pursuant to subch. II of NR 216, Wis. Adm. Code.

1.6 Transfers

A person who has submitted a completed NOI and does not intend to control the permitted activities on the site may transfer authorization under this permit to the landowner who will control the permitted activities. The transfer shall occur upon written notification, signed by both the current permittee and the proposed permittee and sent via certified or registered mail to the Department. Unless the Department notifies the permittee to the contrary, the Department will recognize this permit coverage transfer upon receipt of written notification. The Department may require additional information to be filed prior to granting the transfer of permit coverage. The Department may, if appropriate, require an application for an individual WPDES storm water discharge permit.

Note: Transfer of permit coverage may not occur where the original landowner still owns a portion of the construction site that requires permit coverage. Where multiple landowners are required to have construction site permit coverage, each must file an NOI with the Department. Multiple landowners may utilize the same erosion control and storm water management plans if the plans address the specific needs of the construction site that they own.

1.7 Public Access to Information including Notices of Intent

Construction site NOIs that are submitted to the Department are entered into the Department's database and are then automatically listed on the Department's Internet site at:

<http://www.dnr.state.wi.us/org/water/wm/nps/stormwater/permits/>

Notices of Intent and any associated information submitted to the Department for a construction site regulated under this permit are maintained at Department regional offices. The appropriate Department regional storm water staff person may be contacted to obtain access to such information. Department storm water program contacts are listed on the Department Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater/contact.htm>. Alternatively, you may contact the storm water program at (608) 267-7694 for assistance in determining the appropriate regional storm water contact.

2. NOTICE OF INTENT AND TERMINATION REQUIREMENTS

2.1 Deadlines for Notification

2.1.1 Except as provided in section 2.1.1.1., persons required to obtain coverage under this permit for storm water discharge from a construction site shall submit a completed NOI to the Department or to an authorized local program, via certified or registered mail, in accordance with the requirements of subch. III of ch. NR 216, Wis. Adm. Code. The Department must receive the completed NOI in accordance with the requirements of this section at least 14 working days prior to commencing any land disturbing construction activities unless the Department gives prior authorization. The Department may withhold permit coverage beyond 14 working days in order to request additional information or to review project compliance with erosion control, storm water management, wetland protection, endangered and threatened resources or historic property requirements. A NOI shall be submitted on forms supplied by the Department.

2.1.1.1 For public buildings and buildings that are places of employment regulated by the Wisconsin Department of Commerce pursuant to s. 101.1205, Wis. Stats., and for one- and two-family dwellings regulated by the Wisconsin Department of Commerce pursuant to s. 101.653, Wis. Stats., the Department of Commerce's NOI form and an application for a Wisconsin Uniform Building Permit, respectively, shall be used in lieu of the Department's NOI.

Note: Contact the Wisconsin Department of Commerce or see its rules for information on how to obtain, complete and submit these forms, and for information on applicable Wisconsin Department of Commerce fees.

2.1.2 The Department's NOI forms may be obtained through the Department storm water Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>, Department regional offices or by writing to the Wisconsin DNR, Storm Water Program – WT/2, Box 7921, Madison, Wisconsin 53707-7921.

2.1.3 An application fee shall be paid to the Department in accordance with s. NR 216.43(2), Wis. Adm. Code. However, application fees are not paid to the Department for applications filed with the Wisconsin Department of Commerce or for projects that are authorized by an authorized local program in accordance with s. NR 216.415, Wis. Adm. Code.

2.1.4 The NOI form shall be signed in accordance with section 5.15 of this permit.

2.2 Application Retention

A copy of the NOI or other documentation that storm water discharges from the site are covered under a construction site storm water discharge permit shall be kept with the erosion control and storm water management plans on the construction site and with the landowner. Where appropriate, other indicators such as notification under rules of the Department of Commerce may be used in lieu of the Department's NOI.

2.3 Permit Certificate

The permittee shall post the permit certificate in a conspicuous place on the construction site. The permit certification (DNR Publication # WT-813) is available on the Department Internet site: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>. An authorized local program under s. NR 216.415, Wis. Adm. Code, may make its own permit certificate or equivalent notice for posting.

2.4 Failure to Notify

Persons who fail to notify the Department, the Department of Commerce, or an appropriate agent for the Department of Commerce, as appropriate, of their intent to be covered under this permit, and who discharge storm water runoff to waters of the State associated with land disturbing construction activities of one acre or more, are in violation of ch. 283, Wis. Stats., ch. NR 216, Wis. Adm. Code, and the federal Clean Water Act. Failure to obtain permit coverage may result in forfeitures of up to \$10,000 per day, pursuant to s. 283.91(2), Stats.

2.5 Incomplete Notice of Intent

Within 14 working days after the date the Department receives the NOI, the Department may require an applicant to submit data necessary to complete any deficient NOI or may require the applicant to submit a complete new NOI when the deficiencies are extensive or the appropriate form has not been used.

2.6 Date Coverage Effective

Unless notified by the Department to the contrary, applicants who submit a NOI in accordance with the provisions of subch. III of ch. NR 216, Wis. Adm. Code, are authorized to discharge storm water from land disturbing construction sites under the terms and conditions of this permit 14 working days after the date the Department receives the NOI. The Department may require the landowner to submit erosion control and storm water management plans for review. The Department may deny

coverage under this permit and require submittal of an application for an individual WPDES permit based on a review of the completed NOI or other information.

2.7 Where to Submit

The NOI will instruct the applicant on the appropriate Department office to which a completed NOI shall be submitted.

2.8 Use of Information

All information contained in the NOI other than that specified as confidential by the Department shall be available to the public for inspection and copying. All confidential information, so identified by the applicant, shall be submitted separately. Confidential treatment will be considered only for information identified in documents separate from nonconfidential information, which meets the requirements of s. 283.55(2)(c), Wis. Stats., and for which written application for confidentiality has been made pursuant to s. NR 2.19, Wis. Adm. Code.

2.9 Notice of Termination

Landowners of construction sites regulated by the Department shall comply with this section 2.9. Owners of construction sites for public buildings and buildings that are places of employment and for one- and two-family dwellings regulated by the Department of Commerce shall obtain, prepare and submit Notice of termination forms as required by Commerce's rules.

2.9.1 Within 45 days after a construction site has undergone final stabilization, temporary erosion control best management practices (BMPs) have been removed and all land disturbing construction activities that required coverage under this permit have ceased, the permittee shall submit a signed notice of termination to the Department.

2.9.2 The notice of termination shall be submitted on forms available from the Department. Data submitted in the notice of termination forms shall be used as a basis for terminating coverage under this permit.

2.9.3 Notice of termination forms may be obtained through the Department storm water Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>, Department regional offices or by writing to the Wisconsin DNR, Storm Water Program – WT/2, Box 7921, Madison, Wisconsin 53707-7921.

2.9.4 The notice of termination shall be mailed to the appropriate regional Department office or to the following address:

Wisconsin DNR
Storm Water Program - WT/2
P.O. Box 7921
Madison, WI 53707-7921

2.9.5 Notice of termination forms shall be signed in accordance with section 5.15 of this permit.

2.9.6 Termination of coverage under this permit shall be effective upon the Department's written confirmation of permit termination to the permittee.

2.10 Automatic Termination

The maximum period of permit coverage for any project is limited to 3 years per Notice of Intent. Therefore, permit coverage terminates 3 years after coverage commences, unless another Notice of Intent including application fee is submitted to retain coverage under this permit or a reissued version of this permit.

3. EROSION CONTROL AND STORM WATER MANAGEMENT PLANS

3.1 Erosion Control Plan Requirements

Landowners of construction sites regulated by the Department shall comply with this section 3.1. Owners of construction sites for public buildings and buildings that are places of employment and for one- and two-family dwellings regulated by the Department of Commerce shall comply with erosion control plan requirements specified by Commerce's rules.

Note: The requirements of sections 4.2 to 4.4 of this permit apply to erosion control and storm water management plans for all construction sites regulated under this permit.

3.1.1 The permittee shall develop a site-specific construction site erosion control plan for each construction site regulated under subch. III of ch. NR 216, Wis. Adm. Code. The permittee or their representative, shall implement and maintain as required by this permit and subch. III of NR 216, Wis. Adm. Code, all BMPs specified in the construction site erosion control plan from the start of land disturbing construction activities until final stabilization of the construction site.

3.1.2 The construction site erosion control plan shall meet the applicable performance standards in either s. NR 151.11, Wis. Adm. Code, for construction sites that are not transportation facilities or s. NR 151.23 for transportation facility construction sites that require:

3.1.2.1 Best management practices that, by design, achieve, to the maximum extent practicable, a reduction of 80% of the sediment load carried in runoff, on an average annual basis, as compared with no sediment or erosion controls, until the construction site has undergone final stabilization. Erosion and sediment control BMPs may be used alone or in combination to meet the requirements of this section 3.1.2.1. Credit toward meeting the sediment reduction shall be allowed for limiting the duration or area, or both, of land disturbing construction activity, or for other appropriate mechanisms.

3.1.2.2 Notwithstanding section 3.1.2.1 above, if BMPs cannot be designed and implemented to reduce the sediment load by 80%, on an average annual basis, the construction site erosion control plan shall include a written and site-specific explanation of why the 80% reduction goal is not attainable. The sediment load shall then be reduced to the maximum extent practicable.

Note: Department-approved erosion and sediment control technical standards can be obtained through the Department storm water Internet site at:

<http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>, or contact the Department storm water program in the Bureau of Watershed Management at (608) 267-7694 to get information on how to obtain the erosion and sediment control standards.

3.1.3 The erosion control plan shall be completed prior to the submittal of a NOI for coverage under this permit and shall be amended in accordance with section 3.3.

3.1.4 The construction site erosion control plan shall include, at a minimum, the following items:

3.1.4.1 Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographical map.

3.1.4.2 Description of the intended timing and sequence of major land disturbing construction activities for major portions of the construction site, such as grubbing, excavating, or grading.

3.1.4.3 Estimates of the total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing construction activities.

3.1.4.4 Available data describing the surface soil as well as subsoils.

3.1.4.5 Name of immediate named receiving water from the United States Geological Survey 7.5-minute series topographic maps, and whether the receiving water is an outstanding resource water (ORW), exceptional resource water (ERW) or an impaired water. An updated list of Wisconsin impaired water bodies are listed on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html>. ORWs and ERWs are listed in ss. NR 102.10 and 102.11, Wis. Adm. Code. ORWs and ERWs are also listed on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/>.

3.1.5 The construction site erosion control plan shall include a site map with the following items:

3.1.5.1 Pre-existing topography and drainage patterns, roads and surface waters.

3.1.5.2 Boundaries of the construction site.

3.1.5.3 Drainage patterns and approximate slopes anticipated after major grading activities.

3.1.5.4 Areas of soil disturbance.

3.1.5.5 Location of major structural and non-structural controls identified in the construction site erosion control plan.

3.1.5.6 Location of areas where stabilization practices will be employed.

3.1.5.7 Areas that will be vegetated following land disturbing construction activities.

3.1.5.8 Area and location of wetland acreage on the construction site and locations where storm water is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.

3.1.5.9 Areas that will be used for infiltration of post-construction storm water runoff.

3.1.5.10 An alphanumeric or equivalent coordinate system for the entire construction site.

3.1.5.11 Additional items necessary to depict site-specific conditions.

3.1.6 The construction site erosion control plan shall include a description of appropriate erosion and sediment control BMPs that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The construction site erosion control plan shall clearly describe the appropriate erosion and sediment control BMPs for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control BMPs will be implemented. The description of erosion and sediment control BMPs shall include the following minimum requirements:

3.1.6.1 Description of the expected level of sediment control on the construction site that achieves compliance with s. NR 151.11 or 151.23, Wis. Adm. Code, where applicable.

3.1.6.2 Description of interim and permanent stabilization practices, including a schedule for implementing the practices. The construction site erosion control plan shall ensure that existing vegetation is preserved where feasible and that disturbed portions of the construction site are stabilized as soon as practicable.

3.1.6.3 Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site.

3.1.6.4 Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.

3.1.6.5 Trapping of sediment in channelized flow.

3.1.6.6 Staging land disturbing construction activities to limit exposed soil areas subject to erosion.

3.1.6.7 Protection of downslope drainage inlets where they occur.

3.1.6.8 Prevent tracking of sediment from the construction site onto roads and other paved surfaces.

3.1.6.9 Prevent the discharge of sediment as part of site de-watering.

3.1.6.10 Protect separate storm drain inlet structures from receiving sediment.

3.1.6.11 Clean up of off-site sediment deposits.

3.1.6.12 Stabilization of drainage ways.

3.1.6.13 Installation of permanent stabilization practices as soon as possible after final grading.

3.1.6.14 Description of erosion and sediment control practices put in place for the winter to prevent soil from leaving the construction site during periods of winter and spring thaw and rains.

- 3.1.6.15** Use and storage of chemicals, cement and other compounds and materials used on the construction site shall be managed during the construction period to prevent their transport by runoff into waters of the state.
- 3.1.6.16** Minimization of dust to the maximum extent practicable.
- 3.1.6.17** Additional items necessary to address site-specific conditions.
- 3.1.7** Sediment control BMPs shall be constructed and placed in operation prior to runoff entering waters of the state.
- Note: While regional treatment facilities are appropriate for control of post-construction pollutants they should not be used for construction site sediment removal.
- 3.1.8** No solid materials, including building materials, may be discharged in violation of chs. 30 and 31, Wis. Stats., or 33 USC 1344 or a U.S. Army Corps of Engineers Section 404 permit issued under 33 USC 1344.
- 3.1.9** Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive flow from the structure to a watercourse so that the natural physical and biological characteristics and functions of the watercourse are maintained and protected.
- 3.1.10** Runoff settling basins and pit/trench dewatering settling basins, if used, shall be constructed and operated in accordance with good engineering practices and design standards, and as follows:
- 3.1.10.1** Basins shall discharge to a vegetated or otherwise stabilized area protected from erosion. The principal spillway shall discharge at the bottom of the embankment.
- 3.1.10.2** When the accumulated sediment reaches one-half the height of the sediment control structure, or one-half the depth of the permanent pool, the sediment shall be removed. Materials removed from basins shall be properly disposed of in a manner that will not pollute waters of the state.
- 3.1.10.3** Consideration should be given to installing fences around construction site settling basins for human safety.
- 3.1.11** All maintenance shall be done in accordance with Department-approved technical standards. Where measures are not in accordance with Department-approved technical standards, a description of the procedures used to maintain effective operating conditions of vegetation, erosion and sediment control measures and other protective measures shall be identified in the erosion control plan. Department-approved storm water technical standards are available on the Department Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>. Alternatively, you may contact the Department storm water program at (608) 267-7694 to obtain information on how to order a copy of the storm water technical standards.
- 3.1.12** The construction site erosion control plan shall clearly identify the contractor(s) and subcontractor(s) that will install and maintain erosion and sediment control measures. This information may be added to the plan after the NOI has been submitted to Department. It shall be included in the plan prior to the commencement of land disturbing construction activities.

3.2 Storm Water Management Plan Requirements

3.2.1 Pollution caused by storm water discharges from the site after construction is completed, including rooftops, parking lots, roadways and the maintenance of grassed areas shall be addressed by a storm water management plan. A storm water management plan shall be developed prior to submitting a NOI to the Department, the Department of Commerce, or to an appropriate agent of the Department of Commerce.

Note: The requirements of sections 4.2 to 4.4 of this permit apply to erosion control and storm water management plans for all construction sites regulated under this permit.

3.2.2 The storm water management plan shall meet the applicable performance standards in either s. NR 151.12, Wis. Adm. Code, for construction sites that are not transportation facilities or s. NR 151.24 for transportation facility construction sites. These performance standards include requirements for total suspended solids, peak flow, infiltration, protective areas and fueling and vehicle maintenance areas.

3.2.3 The storm water management plan shall include a description of the BMPs that will be installed during the construction process to control total suspended solids and peak flow, enhance infiltration, maintain or restore protective areas and to reduce petroleum in runoff that will occur after construction operations have been completed. Storm water BMPs shall be in accordance with applicable state and local regulations.

3.2.4 When permanent infiltration systems are used, appropriate on-site testing shall be conducted to determine if seasonal high groundwater elevation or top of bedrock is within 5 feet of the bottom of the proposed infiltration system.

3.2.5 Storm water BMPs shall be adequately separated from wells to prevent contamination of drinking water, and the following minimum separation distances shall be met:

3.2.5.1 Storm water infiltration systems and ponds shall be located at least 400 feet from a well serving a community water system unless the Department concurs that a lesser separation distance would provide adequate protection of a well from contamination.

3.2.5.2 Storm water BMPs shall be located with a minimum separation distance from any well serving a non-community or private water system as listed within s. NR 812.08, Wis. Adm. Code.

Note: Chapter NR 815, Wis. Adm. Code, regulates injection wells including storm water injection wells. Construction or use of a well to dispose of storm water directly into groundwater is prohibited under s. NR 815.11(5), Wis. Adm. Code.

3.2.6 For any permanent structures, provisions shall be made for long-term maintenance with the municipality or other responsible party. For an NOI submitted to the Department, a copy of the signed long-term maintenance agreement shall be submitted to the Department with the NOI unless the Department agrees that it may be submitted by an alternative date prior to termination of permit coverage. The Department may withhold permit coverage until the long-term maintenance agreement is submitted to the Department. For owners having submitted an NOI to Department of Commerce or its agent shall provide a copy of any long-term maintenance agreement to the Department upon request.

Note: The long-term maintenance agreement is an important requirement and the Department wants to ensure that appropriate steps are being taken to secure the agreement. For regional treatment structures, the Department encourages the landowner to obtain a municipal agreement for long-term maintenance of regional treatment structures. Long-term storm water BMPs shall be maintained after permit termination in accordance with ss. NR 151.12 or 151.24 and 216.005, Wis. Adm. Code.

3.2.7 BMPs to control impacts from storm water runoff include infiltration systems, wet detention ponds, constructed wetlands, grassed swales, vegetative protective areas, reduced imperviousness, beneficial reuse such as irrigation or toilet flushing, combinations of these practices, or other methods which do not cause significant adverse impact on the receiving surface water or groundwater. The storm water management plan shall include an explanation of the technical basis used to select the BMPs.

Note: Department-approved storm water management technical standards can be obtained through the through the Department storm water Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>, or contact the Department storm water program in the Bureau of Watershed Management at (608) 267-7694 to get information on how to obtain storm water management standards.

3.3 Amendments

3.3.1 The permittee shall amend the erosion control and storm water management plans if either of the following occurs:

3.3.1.1 There is a change in design, construction, operation or maintenance at the construction site, which has the reasonable potential for the discharge of pollutants and which has not otherwise been addressed in the erosion control and storm water management plans.

3.3.1.2 The actions required by the erosion control and storm water management plans fail to reduce the impacts of pollutants carried by construction site storm water runoff.

3.3.2 For construction sites for which there has been earlier Department review of the erosion control and storm water management plans, if the permittee identifies changes needed in either plan, the permittee shall notify the Department at least 5 working days prior to making the changes in the plan.

3.3.3 The Department may, upon request of a permittee or upon finding of just cause, modify the compliance and reporting schedules or any requirement of a storm water discharge permit.

4. EFFLUENT LIMITATIONS, MONITORING AND RECORDS

4.1 Effluent Limitations

This permit specifies the conditions under which storm water may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105 and NR 140, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to general narrative-type storm water discharge limitations and implementation of storm water management programs and practices.

4.2 Outstanding and Exceptional Resource Waters

4.2.1 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge to an outstanding resource water (ORW) or exceptional resource water (ERW). ORWs and ERWs are listed in ss. NR 102.10 and 102.11, Wis. Adm. Code. An unofficial list of ORWs and ERWs may be found on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/>.

4.2.2 The permittee's storm water erosion control and storm water management plans required under this permit or rules of the Department of Commerce shall be designed to prevent the discharge of sediment and other pollutants to any ORW or ERW in excess of the background level within the water body.

4.2.2.1 If the permittee's construction or post-construction site storm water will discharge to an ORW or ERW, the permittee shall include a written section in both the erosion control and storm water management plans that discusses and identifies the management practices and control measures the permittee will implement to prevent the discharge of any pollutant(s) in excess of the background level within the water body. This section of the permittee's plans shall specifically identify control measures and practices that will collectively be used to prevent the discharge of pollutants in excess of the background level within the water body.

Note: Reducing or eliminating surface water discharges to an ORW or ERW by infiltrating runoff is a method to help prevent the discharge of pollutants to an ORW or ERW in excess of background levels. It is expected that post-construction storm water management practices will be designed to maintain or increase infiltration rates for the site as compared to pre-development infiltration rates for areas that discharge to any ORW or ERW. However, an exemption from infiltrating runoff applies to runoff from contaminated sources or into areas that are prone to groundwater contamination as identified within s. NR 151.12(5)(c)5., Wis. Adm. Code. Infiltration systems must be designed to comply with the groundwater quality standards contained in ch. NR 140, Wis. Adm. Code.

4.2.3 Protective areas of no less than 75 feet shall be maintained adjacent to any ORW and ERW as required under s. NR 151.12 (5)(d) or 151.24 (6), Wis. Adm. Code.

4.3 Fish and Aquatic Life Waters

4.3.1 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge to a fish and aquatic life water as defined in s. NR 102.13, Wis. Adm. Code.

Note: Most receiving waters of the state are classified as a fish and aquatic life water and this classification includes all surface waters of the state except ORW, ERW, Great Lakes system waters and variance water identified within ss. NR 104.05 to 104.10, Wis. Adm. Code.

4.3.2 The permittee's storm water erosion control and storm water management plans required under this permit or rules of the Department of Commerce shall be designed to prevent the significant lowering of water quality of any fish and aquatic life water. Significant lowering of water quality is defined within ch. NR 207, Wis. Adm. Code.

4.4 Impaired Water Bodies and Total Maximum Daily Load Requirements

4.4.1 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge to an impaired water body listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC §1313(d)(1)(C), and the implementing regulation of the US Environmental Protection Agency, 40 CFR §130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards. A list of Wisconsin impaired water bodies may be found on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html>.

4.4.2 The permittee's storm water erosion control and storm water management plans required under this permit or rules of the Department of Commerce shall be designed to prevent the discharge of pollutant(s) of concern to an impaired water body unless the discharge causes the receiving water to meet applicable water quality standards, or the Department has approved a total maximum daily load (TMDL) for the impaired water body. "Pollutant(s) of concern" means a pollutant that is causing impairment of an impaired water body. Approved TMDLs are listed on the Department web site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/index.html>.

4.4.2.1 If the Department has approved a TMDL for the impaired water body, the permittee's erosion control and storm water management plans shall be designed to achieve and maintain compliance with any Department-approved TMDL wasteload allocation for the impaired water to which the construction or post-construction site discharges.

4.4.3 If the permittee's construction or post-construction site storm water will discharge to an impaired water body, the permittee shall include a written section in both its erosion control and storm water management plans that discusses and identifies the management practices the permittee will implement to comply with section 4.4.2 or, if applicable, section 4.4.2.1.

4.5 Inspections and Maintenance

The permittee shall:

4.5.1 Conduct the following construction site inspections:

4.5.1.1 Weekly inspections of implemented erosion and sediment controls; and

4.5.1.2 Inspections of erosion and sediment controls within 24 hours after a rainfall event of 0.5 inches or greater. A "rainfall event" may be considered to be the total amount of rainfall recorded in any continuous 24-hour period.

4.5.2 Repair or replace erosion and sediment control BMPs as necessary within 24 hours of an inspection or notification indicating that repair or replacement is needed.

4.5.3 Maintain, at the construction site or via an Internet site, weekly written reports of all inspections conducted by or for the permittee. If an Internet site method is used, the landowner shall provide the Internet address to the Department prior to its use. Weekly inspection reports shall include all of the following:

4.5.3.1 The date, time and exact location of the inspection.

4.5.3.2 The name of the individual who performed the inspection.

4.5.3.3 An assessment of the condition of erosion and sediment controls.

4.5.3.4 A description of any erosion and sediment control installation or maintenance performed in response to the inspection.

4.5.3.5 A description of the present phase of construction at the site.

Note: The Department has developed a model inspection report that includes the above items and it is available through the Department's storm water Internet site at:
<http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>.

4.5.4 The information maintained in accordance with section 4.4.3 shall, upon request of the Department, be submitted to the appropriate Department office as directed.

4.6 Records

4.6.1 The permittee shall retain records of all construction site inspections, copies of all reports and plans required by this permit, and records of all data used to obtain coverage under this permit. Minimum periods of retention are as follows:

4.6.1.1 If there is a secure location, such as a construction site trailer, the erosion control and storm water management plans and amendments to the erosion control and storm water management plans shall be retained at the construction site until permit coverage is terminated.

4.6.1.2 All reports required by subch. III of ch. NR 216, Wis. Adm. Code, or information submitted to obtain coverage under this permit, including the erosion control and storm water management plans, amendments, and background information used in their preparation, shall be kept by the permittee for a period of at least 3 years from the date of notice of termination.

4.6.2 A landowner operating a construction site under approved municipal erosion and sediment plans, grading plans, or storm water management plans shall also submit signed copies of the NOI to the local agency approving the plans. If storm water from the construction site discharges to a municipal separate storm sewer system that is operating pursuant to a municipal storm water discharge permit issued pursuant to subch. I of ch. NR 216, Wis. Adm. Code, then a signed copy of the NOI shall also be sent to the operator of the system.

4.6.3 Upon request by the Department the permittee shall provide a copy of the erosion control and storm water management plans, construction site inspections and any additional data requested, within 5 working days to the Department, to the operator of the municipal storm sewer system that receives the discharge, and any municipal agency approving erosion and sediment

plans, grading plans or storm water management plans. Additional information may be requested by the Department for resource waters that require additional protection such as outstanding or exceptional resource waters, or other sensitive water resources.

4.7 Compliance with Other Applicable Regulations

4.7.1 The erosion control and storm water management plans shall document other applicable municipal regulatory provisions, compliance with which will also meet the requirements of this permit. If these municipal provisions are more stringent than those provisions appearing in this permit issued pursuant to subch. III of ch. NR 216, Wis. Adm. Code, the erosion control and storm water management plans shall also include a description of how compliance with the municipal provisions will be achieved.

4.7.2 The erosion control and storm water management plans shall comply with applicable state plumbing regulations.

4.8 Department Actions

4.8.1 The Department may notify the permittee at any time that the erosion control and storm water management plans do not meet one or more of the minimum requirements of subch. III of ch. NR 216, Wis. Adm. Code, or this permit, for reducing and preventing the discharge of pollutants. The notification shall identify those provisions that are not being met by the erosion control and storm water management plan, and identify which provisions of the plan require modification in order to meet the requirements. Within the time frame identified by the Department in its notification, the permittee shall make the required changes to the erosion control and storm water management plans, perform all actions required by the revised plans, and submit to the Department a written certification that the requested changes have been made and implemented, and such other information the Department requires. The Department may revoke coverage under this permit for failure to comply with this section or it may take action under s. 283.89, Wis. Stats., or both. The landowner of a construction site where the Department has revoked coverage under this permit may not discharge storm water to waters of the state from the construction site unless an individual WPDES permit for storm water discharge is issued to the landowner.

4.8.2 The Department may require the landowner of any storm water discharge associated with land disturbing construction activity to apply for and obtain a storm water discharge permit if the storm water discharge is either contributing to the violation of a water quality standard or to significant pollution to waters of the state.

4.8.3 The Department shall withdraw a construction site from coverage under this permit and issue an individual WPDES permit upon written request of the discharger. This permit authorizing storm water discharges from the construction site remains in effect until the Department acts on such a request and issues a specific individual WPDES permit.

4.8.4 The Department may deny coverage under this permit and require submittal of an application for an individual WPDES storm water discharge permit based on a review of the completed NOI or other relevant information. The landowner of a construction site denied or revoked coverage under this permit may not discharge storm water to waters of the state from the construction site until an individual WPDES permit for storm water discharge is issued to the landowner.

4.8.5 The Department may require the landowner of any storm water discharge covered by this permit, to apply for and obtain an individual WPDES storm water discharge permit if any of the following occur:

4.8.5.1 The storm water discharge is determined to be a significant source of pollution and more appropriately regulated by an individual WPDES storm water discharge permit.

4.8.5.2 The storm water discharge is not in compliance with the terms and conditions of subch. III of ch. NR 216, Wis. Adm. Code, or of this permit.

4.8.5.3 A change occurs in the availability of demonstrated technology or BMPs for the control or abatement of pollutants from the storm water discharge.

4.8.5.4 Effluent limitations or standards are promulgated for a storm water discharge that is different than the conditions contained in subch. III of ch. NR 216, Wis. Adm. Code.

4.8.6 Any person may submit a written request to the Department that it take action under section 4.7.5 above.

5. STANDARD CONDITIONS

The conditions in s. NR 205.07(1) and (3), Wis. Adm. Code, are incorporated by reference in this permit. The permittee shall be responsible for meeting these requirements, except for s. NR 205.07(1)(n), which does not apply to facilities covered under general permits. Some of these requirements are outlined below in sections 5.1 through 5.24 of this permit. Requirements not specifically outlined below can be found in s. NR 205.07(1) and (3), Wis. Adm. Code.

5.1 Spill Reporting: The permittee shall immediately notify the Department in accordance with ch. NR 706, Wis. Adm. Code, in the event that a spill or accidental release of any material or substance results in the discharge of pollutants to the waters of the state. The Department shall be notified via the 24-hour spill hotline (1-800-943-0003).

5.2 Non-storm Water Discharges: All discharges authorized by this permit shall be composed entirely of storm water associated with land disturbing construction activity, as defined in ch. NR 216, Wis. Adm. Code, or storm water and/or groundwater from excavations and/or pit dewatering. Other direct and indirect waste discharge to waters of the state is prohibited unless covered by another WPDES permit.

5.3 Work near Surface Waters and Wetlands: Any work performed in wetland areas or within areas subject to local floodplain and shoreland regulations must be in compliance with all applicable county and/or local ordinances. All applicable state permits and/or contracts required by Chapters 30, 31, and 87, Wis. Stats., (or Wisconsin Administrative Code adopted under these laws, including ch. NR 103) and applicable federal permits must be obtained as necessary.

5.4 Work near Wells: Adequate separation distances from wells shall be maintained for storm water BMPs including ponds, storm sewers, and infiltration structures as necessary in accordance with chs. NR 811 and 812, Wis. Adm. Code.

5.5 Duty to Comply: Any act of noncompliance with this permit is a violation of this permit and is grounds for enforcement action or withdrawal of permit coverage under this permit and issuance of an individual permit. If the permittee files a request for an individual WPDES permit or a notification of

planned changes or anticipated noncompliance, this action by itself does not relieve the permittee of any permit condition.

5.6 Enforcement Action: The Department is authorized under s. 283.89 and 283.91, Wis. Stats., to utilize citations or referrals to the Department of Justice to enforce the conditions of this permit. Violation of a condition of this permit is subject to a fine of up to \$10,000 per day of the violation.

5.7 Continuation of the Expired General Permit: The Department's goal is to reissue this general permit prior to its expiration date. However, if that does not occur, s. NR 205.08(9), Wis. Adm. Code, specifies that an application for reissuance of the permit will be considered to have been submitted for all of the dischargers in the class or category covered by this general permit. The class application for general permit reissuance allows the conditions and requirements of the expired permit to remain in effect until the permit is reissued or revoked.

5.8 Duty to halt or reduce activity: Upon failure or impairment of BMPs identified in the erosion control and storm water management plan, the permittee shall, to the extent practical and necessary to maintain permit compliance, modify or curtail operations until the BMPs are restored or an alternative method of erosion and storm water control is provided.

5.9 Other Information: When the permittee becomes aware that he or she failed to submit any relevant facts in an application for permit coverage or included incorrect information in plans or reports submitted to the Department, the permittee shall promptly submit such facts or corrected information to the Department.

5.10 Permit actions: As provided in s. 283.53, Wis. Stats., after notice and opportunity for a hearing this permit may be modified or revoked and reissued for cause.

5.11 Modifications to Permit Requirements: The Department may, upon request of a permittee and/or upon finding of just cause, grant modifications to the compliance and reporting schedules or any requirements of this permit. If the Department took this step at its discretion, it would change this general permit following required public noticing and the change would apply to all dischargers covered under this permit.

5.12 Duty to Mitigate: The permittee shall take all reasonable steps to minimize or prevent any adverse impacts on the waters of the state resulting from noncompliance with this permit.

5.13 Proper Operation and Maintenance: The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with this permit and the erosion control and storm water management plan. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with conditions of this permit.

5.14 Duty to Provide Information. The permittee shall furnish the Department, within a reasonable time, any information that the Department may request to determine whether cause exists for modifying, revoking, or reissuing this permit or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records or reports required to be kept by the permittee.

5.15 Certification and Signature Requirements: The notice of intent for coverage under this permit, the notice of termination, and all reports or information submitted to the Department as required by this permit shall be signed by the permittee as follows:

5.15.1 For a corporation, by a responsible corporate officer including president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation covered by this permit.

5.15.2 For a unit of government, by a ranking elected official or other duly authorized representative.

5.15.3 For a limited liability company, by a manager.

5.15.4 For a partnership, by a general partner; and for a sole proprietorship, by the proprietor.

5.16 Liabilities under Other Laws: Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the federal Clean Water Act (CWA), any applicable federal, state or local law or regulation under authority preserved by section 510 of the CWA.

5.17 Property Rights: This permit does not convey any property rights of any sort, or any exclusive privilege. This permit does not authorize any injury or damage to private property or any invasion of personal rights, or any infringement of federal, state or local laws or regulations.

5.18 Severability: The provisions of this permit are severable, and if any provisions of this permit or the application of any provision of this permit to any circumstance is held invalid the remainder of this permit shall not be affected thereby.

5.19 Transfers: Coverage under this permit is not transferable to any person except after notice to the Department in accordance with section 1.6 of this permit.

5.20 Inspection and Entry: The permittee shall allow authorized representatives of the Department, upon the presentation of credentials, to:

5.20.1 Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are required to be maintained under the conditions of this permit.

5.20.2 Have access to and copy, at reasonable times, any records required under the conditions of this permit.

5.20.3 Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit.

5.20.4 Sample or monitor at reasonable times, for the purposes of assuring permit compliance, any substances or parameters at any location.

5.21 Submitting Records: Unless otherwise specified, any reports submitted to the Department shall be submitted to the appropriate Department regional storm water contact or to Wisconsin DNR, Storm Water Program – WT/2, P.O. Box 7921, Madison, WI 53707-7921.

5.22 Noncompliance: Upon becoming aware of any permit noncompliance that may endanger public health or the environment, the permittee shall report this information by a telephone call to the Department regional storm water specialist within 24 hours. A written report describing the noncompliance shall be submitted to the Department regional storm water specialist within 5 days after the permittee became aware of the noncompliance. The Department may waive the written report on a case-by-case basis based on the oral report received within 24 hours. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

5.23 Enforcement: Any violation of s. 283.33, Wis. Stats., ch. NR 216, Wis. Adm. Code, or this permit is enforceable under s. 283.89, Wis. Stats.

5.24 Removed Substances: Solids, sludges, filter backwash or other pollutants removed from or resulting from treatment or control of storm water shall be stored and disposed of in a manner to prevent any pollutant from the materials from entering the waters of the state, and to comply with all applicable federal, state, and local regulations.

5.25 Attainment of Water Quality Standards after Authorization: At any time after authorization, the Department may determine that the discharge of storm water from a permittee's construction site may cause, have the reasonable potential to cause, or contribute to an excursion of any applicable water quality standard. If such determination is made, the Department may require the permittee to do one of the following:

5.25.1 Develop and implement an action plan to adequately address the identified water quality concern.

5.25.2 Submit an individual permit application.

6. DEFINITIONS

Definitions for some of the terms found in this permit are as follows:

6.1 Authorized Local Program means a municipality that has received approval from the Department pursuant to s. NR 216.415, Wis. Adm. Code, to administer the Department's construction site permit program within its jurisdiction.

6.2 Best Management Practices or BMPs means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

6.3 Construction Site means an area upon which one or more land disturbing construction activities occur that in total will disturb one acre or more of land, including areas that are part of a larger common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan such that the total disturbed area is one acre or more.

6.4 Department means the State of Wisconsin Department of Natural Resources.

6.5 Erosion means the process by which the land's surface is worn away by the action of wind, water, ice or gravity.

6.6 Final Stabilization means that all land disturbing construction activities at the construction site have been completed and that a uniform perennial vegetative cover has been established with a density of at least 70% of the cover for the unpaved areas and areas not covered by permanent structures or that employ equivalent permanent stabilization measures.

6.7 Infiltration means the entry and movement of precipitation or runoff into or through soil.

6.8 Infiltration System means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

6.9 Land Disturbing Construction Activity means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover that may result in storm water runoff and lead to increased soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes, but is not limited to, clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

6.10 Landowner or Owner means any person holding fee title, an easement or other interest in property that allows the person to undertake land disturbing construction activity on the property.

6.11 Maximum Extent Practicable means a level of implementing BMPs in order to achieve a performance standard or other goal which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features.

6.12 Municipality means any city, town, village, county or any other public entity created pursuant to law.

6.13 Notice of Intent or NOI means the Department form that must be completed and sent to the Department or to the Wisconsin Department of Commerce to obtain coverage under this permit.

6.14 Performance Standard means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

6.15 Permittee means a person who has applied for and received coverage for storm water discharge under this permit.

6.16 Sediment means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

6.17 Significant contributor means a person who discharges to waters of the state pollutants that contribute to or have the reasonable potential to contribute to an exceedence of a water quality standard.

6.18 Stabilize means the process of making a site steadfast or firm, minimizing soil movement by the use of practices such as mulching and seeding, sodding, landscaping, paving, graveling or other appropriate measures.

6.19 Storm Water means runoff from precipitation including rain, snow, ice melt or similar water that moves on the land surface via sheet or channelized flow.

6.20 Storm Water Management Plan means a comprehensive plan designed to reduce the discharge of pollutants from storm water, after the site has undergone final stabilization, following completion of the construction activity.

6.21 Waters of the State include surface waters, groundwater and wetlands.

6.22 Working Day means any day except Saturday and Sunday and holidays designated in s. 230.35 (4)(a), Wis. Stats.

6.23 WPDES Permit means a Wisconsin Pollutant Discharge Elimination System permit issued pursuant to ch. 283, Wis. Stats.

Type (this is a fillable form) or print and write legibly. Answer all questions. Incomplete application forms will be returned.

Who can use this form: This application form is to be used for:

- Work in public waters administered by the Department of Natural Resources (DNR) under ch. 30, Wis. Stats.,
- Work in waters of the United States administered by the Army Corps of Engineers (COE),
- A permit for wetland fill through DNR and COE,
- The Notice of Intent (NOI) (formerly form 3400-161) for state coverage under the WPDES construction site general permit (#S067831) for land disturbing construction activity or the renewal of a construction site project where coverage under the permit has expired (after 3 years) and the applicant must reapply for coverage. The original Facility Identification Number (FIN) must be provided,
- Dam projects through DNR and COE.

Check any and all boxes that apply to the activity you are undertaking. Please follow the mailing and fee schedules at the end of the instructions for the types of applications you are making. If a project includes both ch. 30 and NR 216 activities, this form and fees will need to be mailed separately as identified for each program.

Section 1: Applicant Information

Provide the legal name of the person, firm, public organization, or any other entity that has the authority to apply for a permit or coverage under a general permit for the activity described in Section 7 of this application. The authorized representative is the person who will ultimately sign the application. Provide the mailing address, e-mail address, fax and phone number for the authorized representative.

For a construction site general permit, state regulations require this form to be signed by the landowner or an authorized representative as follows:

1. For a corporation, by a responsible corporate officer including president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation covered by this permit;
2. For a unit of government, by a ranking elected official, or other duly authorized representative;
3. For a partnership, by a general partner; and for a sole proprietorship, by the proprietor;
4. For a limited liability company, by a manager.

For waterway and wetland permits, the authorized representative may be the landowner or an agent serving at the approval of the landowner. Some activities require the applicant to be the riparian landowner of the property under construction. For other activities, an agent is allowed. Refer to the waterway and wetland permit application attachments for your activity types: <http://dnr.wi.gov/org/water/fhp/waterway/index.htm>

Section 2: Landowner Information

If different from the applicant, provide the legal name of the person, firm, public organization, or any other entity that owns the site described in Section 7 of this application. If the landowner is a corporation, the contact person should be the person completely familiar with the construction project activity and charged with compliance and oversight of the permit. Provide the mailing address, e-mail address, fax and phone number for the contact person.

Section 3: Other Contact Information

In this section, the preparer of the plans, the main contractor, the agent acting for the landowner or any other entity involved in the activity described in Section 7 **may** be identified. Describe their involvement and provide the legal name of the person, firm, or any other entity. The contact person should be the person completely familiar with the construction project activity and/or charged with implementation of the permit. Provide the mailing address, e-mail address, fax and phone number for the contact person. Attach additional names of entities involved at the site if known at this time.

Section 4: Project or Site Information

Enter the construction site's official or legal name and its complete address or location description to the best of your ability. Enter county, municipality name and type of municipality.

Section 5: Location Information

You are required to attach a site map to your application. The map must clearly identify where the project site is located and what water resources are nearby. Use the Surface Water Data Viewer http://dnr.wi.gov/org/water/data_viewer.htm

for an ortho-photo map or use a 7.5-minute series topographic map available at: <http://www.topozone.com/>, <http://www.terraserver.com/>, or <http://www.usgs.gov/>. Draw the perimeter of the project site on the map.

In addition, enter the township, range, section, quarter, and quarter-quarter (to the nearest quarter section) of the project. If the project is on more than one quarter, enter the quarter that best describes the location of the project. Use additional space if needed to describe the project location. Enter the latitude and longitude of the center of the land disturbance or the location of the proposed structure, if this information is available or can be readily accessed.

Section 6: Waterways and Wetlands

Identify every waterbody or waterway that is on-site, nearby or downstream of the project site. Expand the space as needed. Include the first waterbody or waterway that is off-site, but receives drainage from the project. Recognize that a discharge to a storm sewer system which ultimately drains to a waterbody is considered a direct discharge to that waterbody and must be identified here.

Type: Check the appropriate box if the waterbodies or waterways are listed as a lake or stream.

Special Status: Check the appropriate box if any waterbody or waterway listed has been identified as an Outstanding (ORW) or Exceptional Resource Water (ERW) or an impaired water on the 303(d) list. ORWs and ERWs are listed in ss. NR 102.10 and 102.11, Wis. Adm. Code. A list of ORWs and ERWs and impaired waters may be found on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/>. 303(d) listed waters are those impaired waters listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC §1313(d)(1)(C), and the implementing regulation of the US Environmental Protection Agency, 40 CFR §130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards. The WPDES construction site storm water runoff general permit, reissued on September 29, 2006, includes additional requirements for lands that drain to ORW/ERW or 303(d) listed waters. Review the general permit to see what additional measures must be taken.

Wetlands: Also indicate whether the project site includes wetlands, or if wetlands will be filled, excavated or otherwise disturbed because of your project. Indicate the source of your information on wetlands. A good source of information on wetlands and the potential for wetland soils is the Wetland Locator Tool at <http://dnr.wi.gov/wetlands/locating.html>.

The presence of wetlands, endangered resources or historical/archeological sites may require design changes to reduce impacts. You should investigate means of mitigating the impacts prior to submittal of the application.

Section 7: Project Information

Dates: The project's anticipated start and end dates. No construction can begin until you have coverage under a permit.

Photos: Enter the date the "before" photographs were taken. Attach or enclose clear photographs of the project site. For DNR storm water permit coverage, the photograph should show the area of proposed land disturbance sufficient to identify the existing land use and topography. For all other applications, include at least one front view and one side view that depicts the area where construction work will occur from the waterway, and one view of the entire project from the waterway. Too much snow cover or vegetation may obscure important details, so be sure that your photographs show the site in its existing condition. NOTE: Digital copies of the photos on CD are most welcome.

Narrative of the Project: Provide a simple description of the project, including any alterations to the land and water.

Section 8: Attachments and Permit Access

An application consists of Form 3500-053, front and back, as well as any attachments that are appropriate for all activities. For example, if several storm water ponds are proposed, include a Construction Erosion and Sediment Control attachment and all items listed in the pond attachment at <http://dnr.wi.gov/waterways/construction/ponds.html> for each pond requiring a waterway and wetland permit. See the lists of attachments (permit applications) required for the type of activities proposed for waterways and wetlands at: <http://dnr.wi.gov/waterways>. For the construction site storm water runoff general permit, activity refers to the disturbed area under single ownership. The Construction Erosion and Sediment Control and Post-construction Storm Water Management attachments are required for coverage under a construction site storm water permit. List by name the attachments that you have included with the application.

If you are applying for coverage under the construction site storm water runoff general permit you can obtain that permit at http://dnr.wi.gov/runoff/pdf/stormwater/permits/construction/construction_permit_S067831-3.pdf. If you are unable to access the permit via the Internet site, leave the box blank and you will be sent a copy of the permit with your letter of coverage.

Section 9: Certification and Permission

Certification: Wisconsin Statutes provide for severe penalties for submitting false information on this application form.

Signature: The person who must sign this form is the applicant. The applicant was identified on the first page of the form. In addition to the signature, type or print the name of the individual signing the form and the date of signature.

Permission: Signing the form also certifies that the signer gives permission for any Department staff to enter and inspect the site for the purpose of conferring permit coverage or determining compliance.

Instructions Water Resources Application for Project Permits

Form 3500-053 (R 08/09)

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The following mailing information is for construction projects in public waters, waters of the U.S., wetland fill or dam projects (ch. 30 and 31, Stats.) only.

Mailing

http://www.dnr.wi.gov/waterways/about_us/county-contacts.html

Fee Schedule

http://www.dnr.wi.gov/waterways/permit_apps/feesheet.pdf

The following mailing information is for land disturbing activity under the construction site general permit (#S067831) (NR 216, Wis. Adm. Code) only.

Mailing

Unless otherwise directed, mail the Water Resources Application for Project Permits and attachments with application fee to the DNR office listed by county as follows:

NORTHERN REGION COUNTIES			WEST CENTRAL REGION COUNTIES		
Ashland	Langlade	DNR Service Center	Adams	Marathon	DNR Service Center
Barron	Lincoln	1401 Tower Ave.	Buffalo	Monroe	5301 Rib Mountain Rd.
Bayfield	Oneida	Superior, WI 54880	Clark	Portage	Wausau, WI 54401
Burnett	Polk	Phone: (715) 392-7988	Crawford	Trempealeau	Phone: (715) 359-4522
Douglas	Price Rusk		Jackson	Vernon	
Florence	Sawyer		Juneau	Wood	
Forest	Taylor			La Crosse	
Iron	Vilas				
	Washburn		Chippewa	Pepin	DNR Service Center
			Dunn	Pierce St.	890 Spruce St.
			Eau Claire	Croix	Baldwin, WI 54002
					Phone: (715) 684-2914

NORTHEAST REGION COUNTIES			SOUTH CENTRAL REGION COUNTIES		
Brown	Marquette	DNR Northeast Region	Columbia	Jefferson	DNR South Central Region
Calumet	Menominee	2984 Shawano Avenue	Dane	LaFayette	3911 Fish Hatchery Rd.
Door	Oconto	Green Bay, WI 54313-6727	Dodge	Richland	Fitchburg, WI 53711
Fond du Lac	Outagamie	Phone: (920) 662-5100	Grant	Rock	Phone: (608) 275-3266
Green Lake	Shawano		Green	Sauk	
Kewaunee	Waupaca		Iowa		
Manitowoc	Waushara				
Marinette	Winnebago				

SOUTHEAST REGION COUNTIES		
Kenosha	Sheboygan	DNR Service Center
Milwaukee	Walworth	141 NW Barstow Street,
Ozaukee	Washington	Room 180
Racine	Waukesha	Waukesha, WI 53188
		Phone: (262) 574-2100

Fee Schedule

There is a non-refundable fee required with the submittal of this form. Remit a check or money order payable to the Wisconsin Department of Natural Resources (do not send cash). The fee is:

Acres of Land Disturbance	Application Fee
Less than 5	\$140
5 or more and less than 25	\$235
25 or greater	\$350

An application submitted without the required fee will be considered incomplete.

Construction Project Consolidated Permit Application

Form 3500-053 (R 12/06)

Page 1

Use this form for (check all that apply):

- ☐ Work in public waters (DNR – ch. 30, Wis. Stats.)
☐ Work in waters of the U.S (Corps of Engineers)
☐ Permit for Wetland Fill (DNR or Corps of Engineers)
☐ Storm water NOI - Land disturbing construction activity (DNR)
☐ Dam projects (DNR or Corps of Engineers)

Read all instructions provided before completing. If additional space is needed, attach additional pages.

Notice: This form is used to apply for coverage under the state construction site storm water runoff general permit, and to apply for a state or federal permit or certification for waterway and wetland projects or dam projects. This application form is authorized by chs 30 and 31, Wis. Stats., for Alterations to Public Waterways, ch. 281, Wis. Stats., for Wetland Fill and s. 283.33, Wis. Stats., for Storm Water Discharges. Personally identifiable information on this form may be used for other program purposes and may be made available to requestors under Wisconsin's Public Records laws and be posted on the Department website. This form and any required attachments constitute the permit application. Failure to complete and submit this application form may result in a fine and/or imprisonment or forfeiture under the provisions of applicable laws.

Section 1: Applicant Information

Applicant Name (Indiv., Org. or Entity) US Army, Fort McCoy	Authorized Representative Alan Balliett	Title Chief, Environmental Division, DPW	
Mailing Address 2171 South 8th Avenue	City Fort McCoy	State WI	Postal Code 54656
E-mail address alan.balliett@us.army.mil	Telephone Number (include area code) (608) 388-4776	Fax Number (include area code) (608) 388-6235	

Section 2: Landowner Information (if different than Applicant)

Name (Organization or Entity) SAME AS ABOVE	Contact Person	Title	
Mailing Address	City	State	Postal Code
E-mail address	Telephone Number (include area code)	Fax Number (include area code)	

Section 3: Other Contact Information (check one):

<input type="checkbox"/> Consultant or Plan Preparer <input type="checkbox"/> Contractor <input type="checkbox"/> Agent <input type="checkbox"/> Other			If Other, specify:	
Name (Organization or Entity)	Contact Person	Title		
Mailing Address	City	State	Postal Code	
E-mail address	Telephone Number (include area code)	Fax Number (include area code)		

Section 4: Project or Site Location

Site Name (if any)	County	Municipality
Location Address/Description		<input type="checkbox"/> City <input type="checkbox"/> Village <input type="checkbox"/> Township

Section 5: Location Information

Submit one or more legible site maps on a USGS 7.5-minute series topographic map depicting the perimeter of the construction site (land disturbance) and relationship to nearby water resources.

In addition, provide the section, range, township information and if available, the Latitude and Longitude information.

PLSS (Public Land Survey System) Method

Quarter-Quarter		Quarter		Section	Township	Range	Direction	If this site is not wholly contained on the quarter-quarter section, more description:
<input type="checkbox"/> NW	<input type="checkbox"/> NE	<input type="checkbox"/> NW	<input type="checkbox"/> NE		N		<input type="checkbox"/> E	
<input type="checkbox"/> SW	<input type="checkbox"/> SE	<input type="checkbox"/> SW	<input type="checkbox"/> SE				<input type="checkbox"/> W	

Construction Project Consolidated Permit Application

Form 3500-053 (R 12/06)

Page 2

Applicant/Project Name:	County:
-------------------------	---------

Latitude and Longitude Method (if available)

	Degrees	Minutes	Seconds	Method of Determining
Latitude				<input type="checkbox"/> GPS <input type="checkbox"/> DNR's Surface Water Data Viewer or WebView <input type="checkbox"/> Other (specify):
Longitude				

Section 6: Waterways and Wetlands (see Instructions about potential additional application requirements)

Name (description if unnamed) of closest waterbodies	Type <input type="checkbox"/> Lake <input type="checkbox"/> Stream	Special status <input type="checkbox"/> ORW/ERW <input type="checkbox"/> 303(d) listed
--	---	---

Yes No Wetlands:

☐ ☐ Wetlands will be filled, excavated, or disturbed during construction or as part of this project.

The presence of wetlands has been evaluated using: (check all that apply)

<input type="checkbox"/> Wisconsin Wetlands Inventory	<input type="checkbox"/> Wetland Delineation (attach report)
<input type="checkbox"/> Soils (NRCS maps)	<input type="checkbox"/> Other (specify)

Section 7: Project Information (Attach additional sheets as necessary)

Duration:	Anticipated Project Start Date (month/day/year)	Projected Project End Date (month/year)
-----------	---	---

Photos: Provide photographs of the "before" condition. Date of Photographs:

Narrative of the Project:

Provide a one to two paragraph description of the proposed project, including land and water alterations and intended use(s) of the project.

Section 8: Attachments and Permit Access (Include appropriate attachments for each proposed activity.)

The following attachments, together with this form, constitute this permit application: (include all that apply)

Attachment Name(s)

☐ I have obtained a copy of the construction site storm water runoff general permit from the department's Internet site.
http://dnr.wi.gov/org/water/wm/nps/pdf/stormwater/permits/construction/construction_permit_S067831-3.pdf

Section 9: Certification & Permission

Certification: I hereby certify that I am the owner or authorized representative of the owner of the property which is the subject of this Permit Application. I certify that the information contained in this form and attachments is true and accurate. I understand that failure to comply with any or all of the provisions of the permit may result in permit revocation and a fine and/or imprisonment or forfeiture under the provisions of applicable laws.

Permission: I hereby give the Department permission to enter and inspect the property at reasonable times, to evaluate this notice and application, and to determine compliance with any resulting permit coverage.

Name of Owner/Authorized Representative (Print or Type) Alan L. Balliett	Title Chief, Environmental Division, DPW	Telephone Number (608) 388-4776
Signature		Date Signed

LEAVE BLANK - AGENCY USE ONLY

Date Received	Fee Received \$	Construction Site ID#	Docket #	Corps ##
Initial screening: <input type="checkbox"/> Completeness <input type="checkbox"/> Historic checked <input type="checkbox"/> Rare species (NHI) checked <input type="checkbox"/> Wetlands checked				

Thursday, July 15, 2010

Attachment – Construction Erosion and Sediment Control

This Attachment is to be used in conjunction with the **Construction Site Consolidated Permit Application** (Form 3500-053) and will not be accepted if submitted separately. Use this form when there is land-disturbing activity of one acre or more or work in a waterway or wetland and the project is required to have an erosion and sediment control plan.

Project Characteristics

Project Name: _____ County: _____

Type of Development Project

☐ Residential ☐ Commercial/Industrial ☐ Transportation ☐ Utility

Total Area of Construction Site (acres): _____ Total Estimated Disturbed area (acres): _____

Persons or Entities Involved

Entity or person responsible for installation and maintenance of the erosion and sediment control practices

Name (Organization or Entity)	Contact Person	Title	
Mailing Address	City	State	Postal Code
E-mail address	Telephone Number (include area code)	Fax Number (include area code)	

Name of local agencies with authority to review the project.

Description of Construction Activity

Describe the construction activity. Include a description of the site, nature of construction activity, sequence of work, and proposed structural and soil stabilization best management practices (BMPs).

Predominant Soil Types (list surface and subsurface soils)**Erosion and Sediment Control Plan**

Plan and Implementation Requirements	Yes	No	NA	Explanation for No (identify any exemptions)	Plan Sheet Location (page #)
1. Site map is prepared in accordance with s. NR 216.46(5), Wis. Adm. Code.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Erosion and sediment control best management practices plan is prepared in accordance with s. NR 216.46(6), Wis. Adm. Code.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Compliance with mandatory controls:					
a. Design meets the 80% reduction of sediment goal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
b. Inlet protection is provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
c. Dewatering plan is provided in the event that dewatering is needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
d. Tracking control practices are located at entrances and exits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
e. Building and waste material is properly handled to prevent runoff of material into waters of the state.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
f. BMPs are located prior to waters of the state, unless in-stream control is required*.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Attachment – Construction Erosion and Sediment Control

Project Name:

County:

4. No solid material is discharged in violation of ch.30 or 31 Wis. Stats. or 33 USC 1344 permits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Dissipation of velocity at outfalls to assure non-erosive flow is provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Inspection schedule and record keeping is in accordance with s. NR 216.46(9), Wis. Adm. Code.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. A model was used to estimate compliance with the 80% sediment reduction and a summary of input and output and model version is attached.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Until RUSLE 2 is available, the response is N/A for DNR submittals.	
8. The Erosion Control Plan has been submitted to and is in compliance with any requirements of local authorities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. This acknowledges that a copy of the Construction Site Erosion Control Plan has been prepared, will be kept on site, and made available upon request.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Technical Standards Employed (check all that apply) Website: <http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>

Where the applicant specifies a technical standard, the applicant agrees to adhere to the criteria prescribed in the standard. Where a best management practice is proposed for which there is no technical standard or the technical standard is not used in whole, references on effectiveness in meeting the performance standard must be provided.

Erosion and Stabilization Practices:	Technical Standard #		Technical Standard #
<input type="checkbox"/> Channel Erosion Mat	1053	<input type="checkbox"/> Mulching For Construction Sites	1058
<input type="checkbox"/> Construction Site Diversion	1066	<input type="checkbox"/> Non-Channel Erosion Mat	1052
<input type="checkbox"/> Ditch Check	1062	<input type="checkbox"/> Seeding for Construction Site Erosion Control	1059
<input type="checkbox"/> Dust Control on Construction Sites	1068	<input type="checkbox"/> Stone Tracking Pad and Tire Washing	1057
<input type="checkbox"/> Land Application of Anionic Polyacrylamide	1050	<input type="checkbox"/> Temporary Grading Practices for Erosion Control	1067
		<input type="checkbox"/> Vegetative Buffer For Construction Sites	1054
Sediment Control Practices:			
<input type="checkbox"/> Dewatering	1061	<input type="checkbox"/> Silt Curtain*	1070
<input type="checkbox"/> Sediment Bale Barrier(Non-Channel)	1055	<input type="checkbox"/> Silt Fence	1056
<input type="checkbox"/> Sediment Basin	1064	<input type="checkbox"/> Storm Drain Inlet Protection For Construction Sites	1060
<input type="checkbox"/> Sediment Trap	1063	<input type="checkbox"/> Turbidity Barriers*	1069
		<input type="checkbox"/> Water Application of Polymers	1051

* BMPs that are in-stream controls.

Comments

Attachment – Post-Construction Storm Water Management

This Attachment is to be used in conjunction with the **Construction Site Consolidated Permit Application** (Form 3500-053) and will not be accepted if submitted separately. Use this form when there is land disturbing activity of one acre or more and the project is required to have a post-construction storm water management plan under ch. NR 216, Wis. Adm. Code. This form is **not** required for work in a waterway or wetland.

Type of Development Project

☐ In-fill ☐ Redevelopment ☐ New Development

Impervious Area (as a percent of total land disturbance): Before Construction: % After Construction: %

Predevelopment Runoff Curve Number: Post-Development Runoff Curve Number:

Persons or Entities Involved

Entity or person responsible for long-term operation and maintenance of the practices

Name (Organization or Entity) US Army, Fort McCoy	Contact Person Alan Balliett	Title Chief, Environmental Division, DPW	
Mailing Address 2171 South 8th Avenue	City Fort McCoy	State WI	Postal Code 54656
E-mail address alan.balliett@us.army.mil	Telephone Number (include area code) (608) 388-4776	Fax Number (include area code) (608) 388-6235	

Description of Post-Construction Activity

Describe the post-construction activity. Include a description of the development site with any site limitations, proposed combination of structural best management practices (BMPs) to control pollutants, peak flow, volume and drainage areas to practices)

Storm Water Management Plan

Plan and Implementation Requirements	Yes	No	NA	Explanation for No (ID exemptions / exclusions)	Plan Sheet Location (page #)
1. All BMPs will be installed by the time the construction site is considered stabilized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. BMPs are located on-site and prior to waters of the state.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. If an off-site BMP is used, a letter of permission and details about the design of the practice is attached .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. A long-term maintenance agreement is attached .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Infiltration BMPs and ponds are adequately separated from wells.					
a. 400 ft. from a community well and/or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
b. In accordance with s. NR 812.08, Wis. Adm. Code. for non-community or private wells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. The site is required to meet the performance standards of s. NR 151.12 or 151.24, Wis. Adm. Code. (If the answer is no, explain why and skip questions 7-14) Note: A post-construction storm water management plan is still required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. The site meets the applicable TSS reduction goal of s. NR 151.12(5)(a) or 151.24(3), Wis. Adm. Code. TSS reduction is <input type="text"/> %.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. The site meets the applicable peak flow control goal of s. NR 151.12(5)(b) or 151.24(4), Wis. Adm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Attachment – Post-Construction Storm Water Management

Code.					
9. The site meets the applicable infiltration goal of s. NR 151.12(5)(c) or 151.24(5), Wis. Adm. Code. Design infiltration rate used is <input type="text"/> in/hr. Percent of pre-development infiltration volume infiltrated is <input type="text"/> %. Area dedicated to infiltration is <input type="text"/> % of the project area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Pretreatment is provided before infiltration of runoff from parking lots or commercial, industrial, and institutional roads.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. A summary of the results of the site evaluation, similar to Step D in Technical Standard 1002, is attached .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. A protective area is established or maintained in accordance with s. NR 151.12(5)(d) or 151.24(6), Wis. Adm. Code. Minimum protective area width is <input type="text"/> ft.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13. For fueling and vehicle maintenance areas, the plan meets the no visible sheen goal of s. NR 151.12(5)(e) or 151.24(7), Wis. Adm. Code.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14. Modeling was used to estimate compliance with the TSS, peak flow, and/or infiltration requirements and a summary of input, output and model version is attached .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
15. The Storm Water Management Plan has been submitted to and is in compliance with local requirements. Date of local compliance letter: <input type="text"/> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
17. This acknowledges that a copy of the Storm Water Management Plan has been prepared, will be kept on site, and made available upon request.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Technical Standards Employed (check all that apply) Website: <http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>

Where the applicant specifies a technical standard, the applicant agrees to adhere to the criteria prescribed in the standard. Where a best management practice is proposed for which there is no technical standard or the technical standard is not used in whole, references on effectiveness in meeting the performance standard must be provided.

TSS Reduction, Peak Flow Control, Infiltration Practices:

Technical Standard # or other Reference

- | | |
|--|----------------------------|
| <input type="checkbox"/> Bioretention for Infiltration | 1004 |
| <input type="checkbox"/> Compost | S100 |
| <input type="checkbox"/> Infiltration Basin | 1003 |
| <input type="checkbox"/> Rain Gardens | DNR Publication PUB-WT-776 |
| <input type="checkbox"/> Site Evaluation for Stormwater Infiltration (For DNR sites) | 1002 |
| <input type="checkbox"/> Swales | 1005 |
| <input type="checkbox"/> Wet Detention Pond | 1001 |

Comments

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

CONSTRUCTION SITE INSPECTION REPORT

Form 3400-187 (rev. 9/04)

Page 1 of 2

Notice: Use of this specific form is voluntary, but the information contained on this form must be collected and kept by the permittee under s. NR 216.48(4), Wis. Adm. Code, for a construction site covered under the General WPDES Construction Site Storm Water Discharge Permit, Permit No. WI-0067831-2. This form is provided for the convenience of the permittee to meet the requirements of s. NR 216.48(4), Wis. Adm. Code. Multiple copies of this form may be made to compile the inspection report.

Inspections of implemented erosion and sediment control best management practices must be performed weekly and within 24 hours after a precipitation event 0.5 inches or greater which results in runoff.

Weekly written reports of all inspections conducted by or for the permittee must be maintained throughout the period of general permit coverage.

The information maintained in accordance with s. NR 216.48 (4) must be submitted to the Department upon request.

Name of Permittee:				
Construction Site Name (Project):			Construction Site ID No.:	
Location:			County:	
Contractor:			Field Office Phone:	
Note: Weekly inspection reports, along with erosion control and stormwater management plans, are required to be maintained on site and made available upon request.				
Date of inspection (mm/dd/yy): _____		Type of inspection: <input type="checkbox"/> Weekly <input type="checkbox"/> Precipitation Event <input type="checkbox"/> Other (specify) _____		
Time of inspection: Start: _____ a.m./p.m. End: _____ a.m./p.m.		Name(s) of individual(s) performing inspection:		
Weather:				
Description of present phase of construction:				
Modifications Required	Yes	No	Not Applicable	Comments/Recommendations about the overall effectiveness of the erosion and sediment control measures. Note: For each item checked "Yes", complete the follow-up information on page 2.
Ditch Checks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Erosion Control Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Erosion Mat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Grading Practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Inlet Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mulch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Offsite Sediment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Permanent Seeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Schedule / Phasing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Silt Fence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Silt Screen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sod	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Stabilized Outlet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temp. Diversion Channel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temp. Settling Basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Temporary Seeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tracking Pads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Turbidity Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

CONSTRUCTION SITE INSPECTION REPORT

Form 3400-187 (rev. 9/04)

Page 2 of 2

Name of Permittee:		
Construction Site Name (Project):		Construction Site ID No.:
Use the space below for detailed follow-up action items.		
Exact place of erosion/sediment control inspected	Type of erosion/sediment control and its observed condition	Description of any necessary maintenance or repair to erosion/sediment control, including anticipated date of completion

Appendix BB

Record of Environmental Consideration

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

TITLE: Construct a Network Enterprise Center (NEC) Headquarters Building on Fort McCoy, WI.

DESCRIPTION OF PROPOSED ACTION: Construct a permanent headquarters building for the NEC (formerly DOIM) in the area currently occupied by B-1450-1458. Seven buildings will be removed prior to construction (Covered by a separate REC). The new structure will be approximately 21,500 square feet with parking.

The project will encompass approximately 3.0 acres of land and no trees will be removed. Half of the site was occupied by WWII era wooden structures and half is grass land. A 100' setback has been established to protect wetlands and flood plain. Site map is attached.

Major environmental concerns are:

- A Wisconsin Pollution Discharge Elimination System (WPDES) permit must be obtained because the project disturbs more than one acre of land.
- A strong Erosion and Sediment Control Plan will be developed to protect Ash Run and the nearby wetlands (See attached map) during construction of the project and future operation of the site.
- Noxious weeds are present on the north end of the project area. See attached map and instructions.
- This site has a seasonally high water table (See attached map). De-watering may be a factor, which will require a state permit. The de-watering process should be carried out so as to minimize the impact to Ash Run and nearby wetland by silt and erosion.

ANTICIPATED DATE/OR DURATION OF PROPOSED ACTION:
FY10.

IT HAS BEEN DETERMINED THAT THE ACTION:

1. Is adequately covered in the existing EA entitled and dated: A Programmatic EA for the Real Property Master Plan was completed in 11/08.

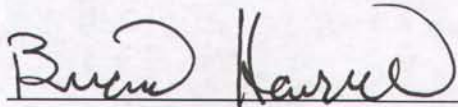
2. Qualifies for Categorical Exclusion.

3. Is exempt from NEPA requirements under provisions of _____.

AN ENVIRONMENTAL BASELINE SURVEY (EBS) IS:

- X Required for this action and is attached.
 Not required for this action.

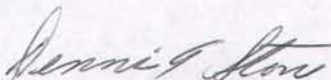
SIGNED:



PROPONENT

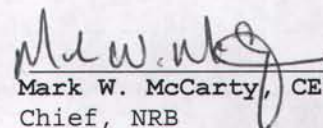
9 APR 2010
Date

REVIEWED:



Dennis A. Stone
Environmental Specialist
Contractor, DPW

APPROVED:



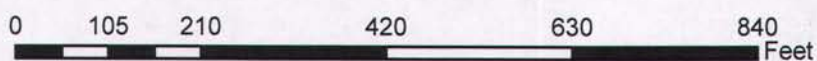
Mark W. McCarty, CEP
Chief, NRB
DPW-ED

NEC HQ Bldg. Project Site



Map Developed By Dennis Stone
McCoy PW-JV
23 March 2010

1 inch equals 204.706942 feet



Thursday, July 15, 2010

NEC HEADQUARTERS WETLAND MAP

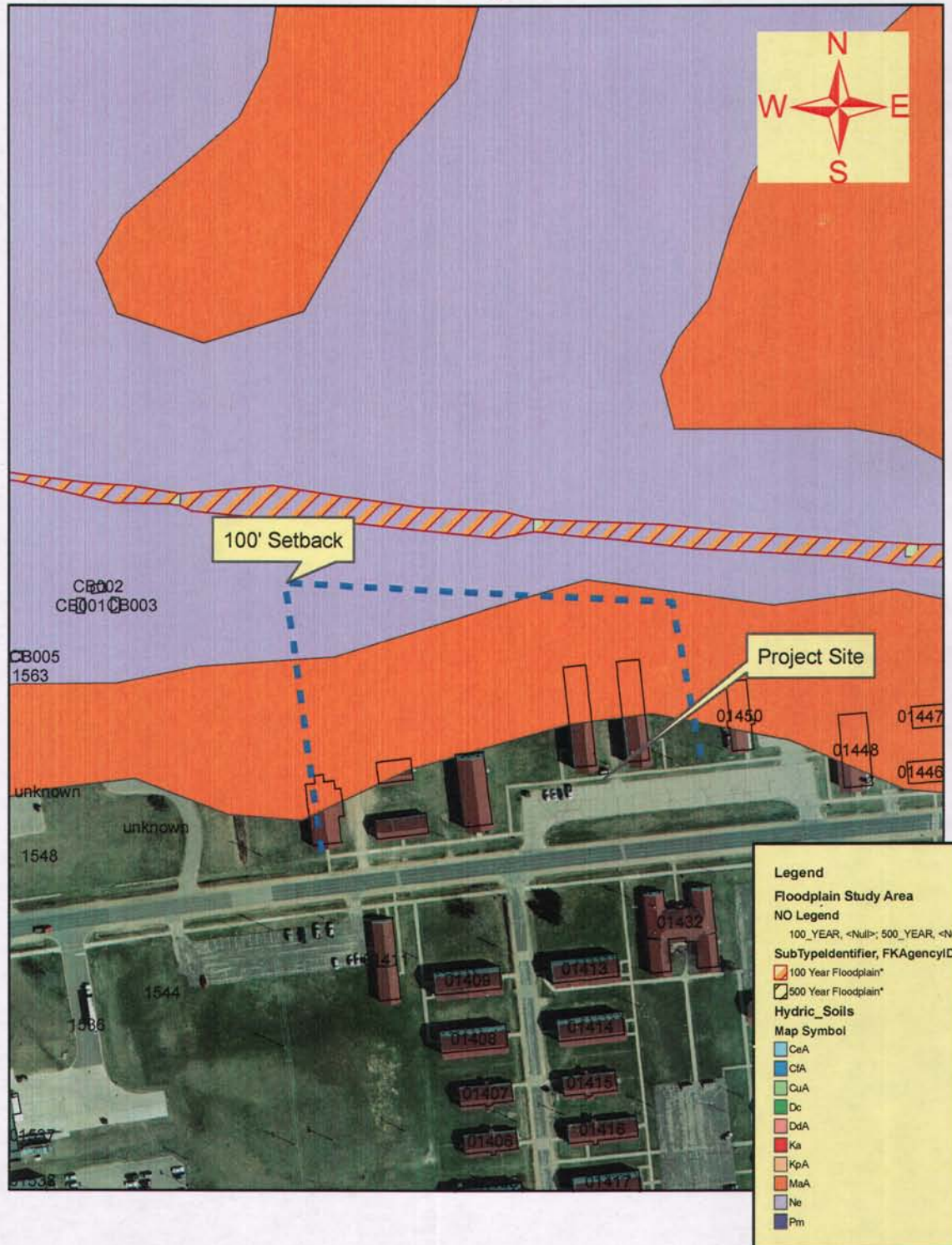


0 125 250 500 Feet

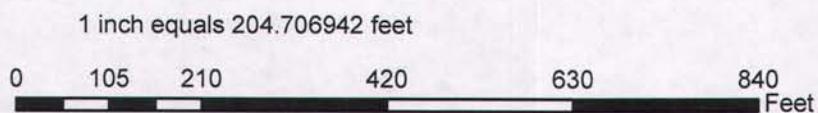


Thursday, July 15, 2010

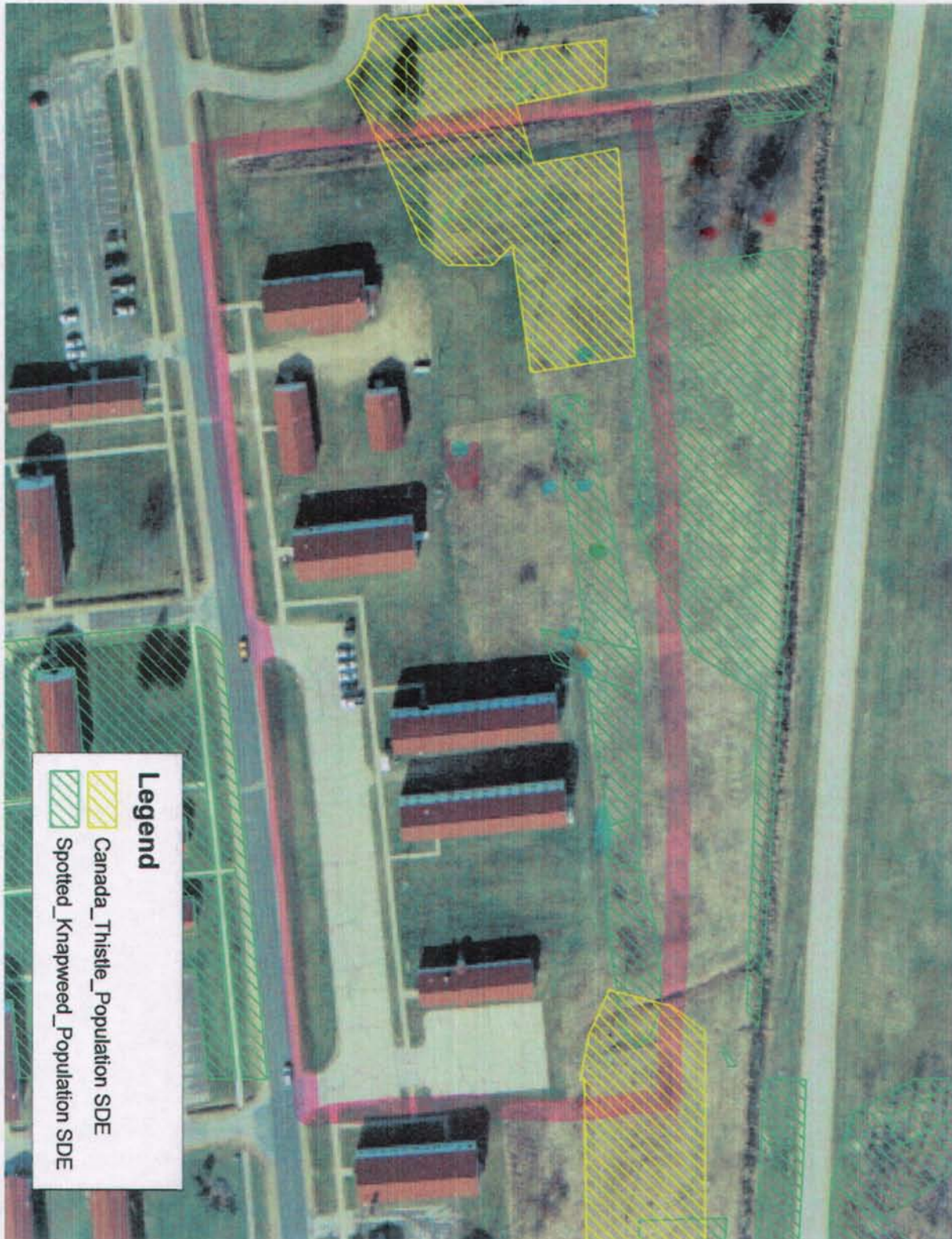
NEC HQ Bldg. Wet Soils



Map Developed By Dennis Stone
McCoy PW-JV
23 March 2010



Thursday, July 15, 2010



1450 Area Demo Invasive Plant Species Locations



30m
10m
10m



**Noxious Weeds and Invasive Species
Information**

As with many of the other projects, equipment that will be involved with earth moving or clearing must be free of plant seeds, soil, or plant propagule harboring debris both before and after leaving the site. The cleaning should be done with high pressure water or air. Any soil or contaminated debris that needs to be moved should be taken to an area designated by us.

Once the project area is cleared and gravel or black-top in place, the restrictions on cleaning equipment etc can be lifted. If additional work that exposes the original soil or gravel layer is done then any equipment involved should be cleaned as described above.

As mentioned in many NEPA responses before, this project must comply with the goals and direction of:

- (1) E.O. 13112, Invasive Species.
- (2) Army Policy Guidance for Management and Control of Invasive Species
- (3) DPW Site Work Standard
- (4) AR200-1, 4-3 Land Resources
- (5) Fort McCoy Wildlife Program Invasive Weed Management Plan (draft)

Please let me know if you have any questions.

Also, please give me a heads up when this project commences as I would like to coordinate treatments in the existing ECS lots that will be freed up.

Thank you,

David L. Texley
Invasive Species Coordinator (CSU/CEMML) Fort McCoy Wildlife Team

Natural Resources Branch
(608) 388-7018

PROPERTY INSPECTION CHECKLIST FOR ENVIRONMENTAL BASELINE STUDIES

(The Proponent Agency is DCSSENGR)

PROJECT NAME: NEC Headquarters Building & Parking Lots.
 PROPOSED ACTION: Construct an Approx. 21,000 SF building to house the
Information Management HQ with parking.

I. PROPERTY USE:

A. CHECK ALL THAT APPLY.

RESIDENTIAL _____ INDUSTRIAL _____ MIXED _____
 AGRICULTURAL _____ COMMERCIAL X OTHER _____ Training

B. ADJACENT PROPERTY USE AND TOPOGRAPHIC RELATIONSHIP:

NORTH: <u>Grass & Ash Run</u>	HIGHER _____	LOWER <u>X</u>	SAME _____
SOUTH: <u>Parking lot & S. 11th Ave.</u>	HIGHER _____	LOWER _____	SAME <u>X</u>
EAST: <u>WW II Bldgs.</u>	HIGHER _____	LOWER _____	SAME <u>X</u>
WEST: <u>Urban Grass</u>	HIGHER _____	LOWER _____	SAME <u>X</u>

C. ATTACH COPY OF INSTALLATION MAP SHOWING FOOTPRINT OF AREA UNDER CONSIDERATION.

II. SITE OWNERSHIP HISTORY AND USE:

1. CURRENT OWNER: Fort McCoy
2. CURRENT LAND USE: Training Buildings and BOQs scheduled for demolition
3. PREVIOUS OWNER(S): _____
4. PREVIOUS LAND USE: _____

III. PROPOSED FUTURE USE(S):

1. TYPE USE(S): Modern Headquarters Building
2. USER POPULATION: Garrison Population
3. ANY OBVIOUS USE RESTRICTIONS: Wetlands near but not on site. Proper Setbacks
Will be followed (100'). Site has wet soils and high water table

IV. FEATURES / COMMENTS:

All existing buildings will be demolished prior to construction.

V. SITE INSPECTION:

A. ENVIRONMENTAL CONDITIONS OBSERVED (SHOW LOCATION ON FACILITY MAPS)

	YES	NO	N/A	REMARKS
1. SUSPICIOUS/UNUSUAL ODORS	_____	<u>X</u>	_____	Winter Survey w/snow
2. DISCOLORED SOILS	_____	<u>X</u>	_____	
3. DISTRESSED VEGETATION	_____	<u>X</u>	_____	

	YES	NO	N/A	REMARKS
4. DIRT / DEBRIS MOUNDS	—	X	—	
5. GROUND DEPRESSIONS	—	X	—	
6. POL STAIN	—	X	—	
7. ASBESTOS CONTAINING MATERIALS	—	X	—	
8. ABOVE GROUND STORAGE TANKS	—	X	—	
LOCATION(S): _____				
SIZE/PRODUCT: _____				
9. UNDERGROUND STORAGE TANKS	—	X	—	
LOCATION(S): _____				
SIZE/PRODUCT: _____				
10. LANDFILLS / WASTE PILES	—	X	—	
11. IMPOUNDMENTS / LAGOONS	—	X	—	
12. INJECTION WELLS	—	X	—	
13. DRUM / CONTAINER STORAGE	—	X	—	
(PRODUCT): _____				
14. INCINERATOR	—	X	—	
15. ELECTRICAL TRANSFORMERS	X	—	—	will be removed or moved.
16. STANDPIPES / VENT PIPES	—	X	—	
17. DISCHARGE TO SURFACE	—	—	—	
WATERS / DITCHES	X	—	—	Over ground to Ash Run
18. POWER OR PIPE LINES	X	—	—	OH Elec. All others UG
19. MINING / LOGGING ACTIVITY	—	X	—	
20. GROUNDWATER MONITORING WELLS	—	X	—	
21. OTHERS: _____				
B. CULTURAL RESOURCES: (HISTORIC PROPERTIES /ARCHAEOLOGY)				
No concerns from NRB Cultural Resources				
C. ENDANGERED / THREATENED SPECIES: (STATE / FEDERAL LIST)				
No concerns from NRB T&E species biologist.				
D. HAS AN EBS, EA, OR EIS BEEN PREVIOUSLY COMPLETED?Yes. EA.				
TITLE: Programmatic EA for the Real Property Master Plan, Fort McCoy, WI				
LOCATION: B-2171 DPW-ED Office				
SOURCE: CH2MHILL				
DATE: November 2008				

VI. MAPS: Attached

VII. OTHER INFORMATION: A Construction WPDES Permit will be required because the Project area is over one acre. A Dewatering permit will most likely be required.

VIII. RECOMMENDATIONS: Approve

IX. PREPARED BY: Dennis A. Stone
 DENNIS A. STONE
 Env. Protection Specialist
 Contractor, DPW

APPROVED BY: Mark W. McCarty
 Mark W. McCarty, CEP
 Chief, Natural Resources Br.
 DPW-ED

PROJECT REVIEW COMMENTS

Project Title: NEC Headquarters Building Construction

Project Number: _____ Date In: _____ Date Out: _____

	Program Area	Reviewer Include Phone #	Date	Comments
	Air Quality	Craig Bartholomew Ext. 8453	3/23/10	No Concerns
	Hazardous Wastes/ Fuel Spills	Tim Gelhaus Ext. 4787		
	Lead/Asbestos	Dennis Stone Ext. 2343	3/23/10	N/A
	Solid Waste	Dave Schafer Ext. 5915		
	Recycling of Construction Waste	Dave Schafer Ext. 5915		
	UST/AST	Tim Gelhaus Ext. 4787		
	Energy & Water Conservation	Dennis Stone Ext. 2343	3/23/10	LEED Silver Design.
	Soils	Dennis Stone Ext. 2343	3/23/10	Construction in hydric soils with seasonal high water table. De-watering likely to be required.
	Water Quality – Supply Groundwater & Wellhead Protection	Craig Bartholomew Ext. 8453	3/23/10	No Concerns
	Storm Water	Dennis Stone Ext. 2343	3/23/10	Project area is 2.0-2.5 acres. A WPDES will be required.
	Entomology	David Olson 2-2557		
	Endangered Species	Tim Wilder Ext. 5679	3/24/10	No Concerns
	Wildlife Resources	David Beckmann Ext. 5374	3/24/10	Noxious weeds
	Forest Resources	Jim Kerkman Ext. 2102	3/23/10	No Concerns
	Cultural Resources	Stephen Wagner Ext. 4919	3/23/10	No Concerns
	Water Resources/Aquatics	John Noble Ext. 5796	3/23/10	Concerned for protection of Ash Run during construction and operation of the new building. Wants good Storm Water Plan developed.
	NEPA Review - BCRT	Gary Schnell Ext. 6501	3/24/10	Yeager – Erosion and Sediment control a concern.
	Health & Safety Plan	Dennis Stone Ext. 2343		
	ITAM:	Brent Friedl Ext. 6257		



McCoy Public Works

A Joint Venture between Bering Straits Aki and LB&B Associates Inc.

DATE: 9 Apr 2010

TO: Mr. Mark McCarty, Chief, NRB, DPW-ED *mm/413-10*

THROUGH: Mr. Tim Gelhaus, Environmental Manager – McCoy PW JV *copy for Tim*

THROUGH: Mr. Gary Schnell, Environmental Protection Specialist, NRB, DPW-ED *GSS*

FROM: Dennis Stone, Environmental Specialist – McCoy PW JV *DS*

SUBJECT: REC/EBS for NEC HQ. C.5.4.13

DELIVERABLE DUE DATE:

Please sign.

Appendix CC
DD Form 1354

TRANSFER AND ACCEPTANCE OF DoD REAL PROPERTY

Form Approved
OMB NO. 0704-0188

PAGE 1 OF 2 PAGES

The public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Washington Headquarters Services, Executive Services Directorate, Information Management Division, 1155 Defense Pentagon, Washington, DC 20301-1155 (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ORGANIZATION.

1. FROM (Organization Name)				2. DATE PREPARED (YYYYMMDD)		3. PROJECT/JOB NUMBER		4. SERIAL NUMBER		8. TRANSACTION DETAILS					
5. TO (Organization - Installation Code and Name)				6. RPSUID/SITENAME/INSTCODE/INSTNAME SITE cd XXXXX Ft McCoy, WI		7. CONTRACT NUMBER(S)		7a. PLACED-IN-SERVICE DATE (YYYYMMDD)		a. METHOD (X all that apply)			b. WHEN/EVENT (X one)		
										<input checked="" type="checkbox"/> ACQUISITION BY CONSTRUCTION			<input checked="" type="checkbox"/> TOTAL ASSET PLACED-IN-SERVICE		
										<input type="checkbox"/> TRANSFER BETWEEN SERVICES			<input type="checkbox"/> PARTIAL ASSET PLACED-IN-SERVICE		
<input type="checkbox"/> CAPITAL IMPROVEMENT			<input type="checkbox"/> INVENTORY ADJUSTMENT			c. TYPE (X one)									
<input checked="" type="checkbox"/> DRAFT			<input type="checkbox"/> FINAL			<input type="checkbox"/> INTERIM									
9. ITEM NO.	10a. FACILITY NO.	10b. RPUID	11. CATEGORY CODE	12. CATCODE DESCRIPTION	13. TYPE CODE	AREA		OTHER		18. COST	19. FUND SOURCE	20. FUND ORG	21. INTER-EST CODE	22. ITEM REMARKS	
				DOIM FACILITY		14. PRIMARY UM	15. PRIMARY UM QUANTITY	16. SECONDARY UM	17. SECONDARY UM QUANTITY						
23. STATEMENT OF COMPLETION. The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.										24.a. ACCEPTED BY (Typed Name and Signature)				b. DATE SIGNED (YYYYMMDD)	
a. TRANSFERRED BY (Typed Name and Signature)						b. DATE SIGNED (YYYYMMDD)				asdf				2062060	
c. TITLE (Area Engr./Base Engr./DPW/Construction Agent)						20564				c. TITLE (DPW/RPAO)				25. PROPERTY VOUCHER NUMBER	
asdf										asdf				asdf	

TRANSFER AND ACCEPTANCE OF DoD REAL PROPERTY

Form Approved
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PAGE 1 OF 2 PAGES

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5. TO (Organization - Installation Code and Name)				6. RPSUID/SITENAME/INSTCODE/INSTNAME		7. CONTRACT NUMBER(S)		7a. PLACED-IN-SERVICE DATE (YYYYMMDD)		a. METHOD (X all that apply)			b. WHEN/EVENT (X one)				
										<input checked="" type="checkbox"/> ACQUISITION BY CONSTRUCTION <input type="checkbox"/> TRANSFER BETWEEN SERVICES <input type="checkbox"/> CAPITAL IMPROVEMENT <input type="checkbox"/> INVENTORY ADJUSTMENT			<input checked="" type="checkbox"/> TOTAL ASSET PLACED-IN-SERVICE <input type="checkbox"/> PARTIAL ASSET PLACED-IN-SERVICE				
										c. TYPE (X one)							
										<input checked="" type="checkbox"/> DRAFT <input type="checkbox"/> FINAL <input type="checkbox"/> INTERIM							
9. ITEM NO.	10a. FACILITY NO.	10b. RPUID	11. CATEGORY CODE	12. CATCODE DESCRIPTION		13. TYPE CODE	AREA		OTHER		18. COST	19. FUND SOURCE	20. FUND ORG	21. INTER-EST CODE	22. ITEM REMARKS		
							14. PRIMARY UM	15. PRIMARY UM QUANTITY	16. SECONDARY UM	17. SECONDARY UM QUANTITY							
23. STATEMENT OF COMPLETION. The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.											24.a. ACCEPTED BY (Typed Name and Signature)			b. DATE SIGNED (YYYYMMDD)			
a. TRANSFERRED BY (Typed Name and Signature)							b. DATE SIGNED (YYYYMMDD)		asdf						2062060		
c. TITLE (Area Engr./Base Engr./DPW/Construction Agent)							20564		c. TITLE (DPW/RPAO)						25. PROPERTY VOUCHER NUMBER		
asdf									asdf						asdf		

Appendix DD
Supplemental Specification:
Building Air Barrier

Ft. McCoy DOIM Facility
Ft. McCoy, WI

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SECTION 07 25 00.00 06

BUILDING AIR BARRIER SYSTEM

PART 1 GENERAL

1.1 CONTRACTOR RESPONSIBILITY

The Contractor is responsible for the construction of an air barrier system that is contiguous and connected across the six surfaces of the building envelope meeting the performance requirements as outlined in this specification.

The Contractor shall perform a building air tightness test and thermography test to demonstrate that the building envelope is properly sealed and insulated. The testing shall be performed in accordance with the procedures outlined in this specification.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 1060	(90; R 2003) Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 1186	(2003) Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
ASTM E 1827	(96; R 2002) Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
ASTM E 779	(2003) Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM D 4541	(2002) Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 6781	(1983) Thermal Insulation - Qualitative Detection of Thermal Irregularities in Building Envelopes - Infrared Method, First Edition
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1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES

SD-03 Product Data

Air Barrier Inspector

The inspector shall have 2 years experience in the installation of air barrier materials and assemblies including the experience in joining and sealing various components, and sealing of penetrations of air barriers. The inspector shall have experience coordinating and instructing subcontractors involved in the installation joining and sealing of air barrier materials and components.

Building Air Tightness Test Technician

The testing technician shall have 2 years experience in air tightness testing using the specified testing standard.

Building Air Tightness Test Procedures; G, DO

The Contractor shall submit detailed test procedures indicating the test apparatus, the test methods and procedures, and the analysis methods to be employed for the Building Air Tightness Test. The Building Air Tightness Test Procedures shall be submitted not later than 60 days after Notice to Proceed.

The Contractor shall submit detailed test procedures indicating the test apparatus, the test methods and procedures, and the analysis methods to be employed for the Thermography Test. The Thermography Test Procedures shall be submitted not later than 60 days after Notice to Proceed.

Thermographer

The Thermographer shall have a Certification in Infrared Building Science from the Infrared Training Center or from the Building Science Institute. The thermographer shall have 2 years experience in infrared thermography.

SD-06 Test Reports

Test Reports; G, RO

The inspection and testing agency will submit a certified written report, in duplicate, of each inspection, test, or similar service to the Contractor with duplicate copies to the Contracting Officer not later than 10 days after each test.

Report Data: Written reports of each inspection and test or similar service shall include all the Report items described in ASTM E 1827. Additionally, the report shall also include the

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following information:

- a. Date of Issue
- b. Project title and number
- c. Name, address, and telephone number of testing agency
- d. Dates and locations of samples and tests or inspections
- e. Names of individuals making the inspection or test
- f. Designation of the Work and test method
- g. Identification of product and Specification Section
- h. Complete inspection or test data
- i. Test results and an interpretation of test results
- j. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements
- k. Name and signature of laboratory inspector
- l. Recommendations on retesting

Building Air Tightness Test Reports; G, DO

The Building Air Tightness Test analysis, and report shall be submitted not later than 10 days after the test.

Thermography Test Report; G, DO

The Thermography Test analysis, and report shall be submitted not later than 10 days after the test.

1.4 ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS

This section includes administrative and procedural requirements for accomplishing an airtight building enclosure that controls infiltration or exfiltration of air.

1. The airtight components of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the airtightness of the building enclosure are called "the air barrier system".

2. The Contractor is responsible for the coordination between the trades, the proper scheduling and sequencing of the work, preconstruction meetings, inspections, tests, and related actions including inspection and test reports.

3. The Contractor shall ensure that the intent of constructing the building enclosure with a continuous air barrier system to control air leakage into or out of the conditioned space is achieved. The air barrier system shall have the following characteristics:

- a. It must be continuous with all joints sealed.
- b. It must be structurally supported to withstand positive and negative air pressures applied to the building enclosure.
- c. Connection shall be made between:
 - 1) Foundation and walls
 - 2) Walls and windows
 - 3) Walls and doors
 - 4) Different wall systems
 - 5) Walls and roof
 - 6) Walls and roof over unconditioned space
 - 7) Walls, floors, and roofs across construction, control, and expansion joints.

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- 8) Walls, floors, and roofs to utility, pipe and duct penetrations.

4. It is the Contractor's responsibility to ensure that all penetrations through the air barrier system, and all paths of air infiltration or exfiltration, are sealed airtight.

5. Inspection and testing services are required to verify compliance with requirements specified or indicated.

1.5 BUILDING AIR TIGHTNESS TEST TECHNICIAN RESPONSIBILITIES

The technician shall:

- a. Describe the test procedures, test apparatus, and analysis method.
- b. Perform the Building Air Tightness Test.
- c. Perform the Thermography Test.
- d. Participate in identifying deficiencies in the building construction upon failure of a test to meet the specified leakage rate.
- e. Submit a report of each air tightness test whether successful or not.
- f. Submit a report of each thermography test identifying problem areas.

1.6 QUALITY CONTROL

The Contractor shall engage the services of an experienced air barrier inspector to oversee the sequencing and installation of the air barrier component materials and assemblies, to oversee the proper joining and sealing of the materials and assemblies, to oversee the sealing of penetrations of the air barrier materials and assemblies, and to instruct the subcontractors on the above.

1.6.1 Documentation and Reporting

Installers shall document the entire installation process on daily job site reports. These reports include information on the Installer, substrates, substrate preparation, products used, ambient and substrate temperature, the location of the air barrier installation, the results of the quality control procedures, and testing results.

1.7 CONTRACTOR RESPONSIBILITIES

1.7.1 Coordination of Subcontractor(s)

The Contractor shall provide coordination between the Subcontractors involved in the construction of the air barrier system, coordinate the sequence of construction to ensure continuity of the air barrier system joints, junctures, penetrations, and transitions between materials and assemblies of materials and products from substructure to walls to roof. The Contractor shall provide quality assurance procedures, testing and verification as specified. The Contractor shall facilitate inspections, tests, and other quality control services specified elsewhere in the Contract Documents and required by the Contracting Officer.

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1.7.2 Pre-Construction Conferences

The Contractor shall organize pre-construction conferences between the subcontractors involved in the construction of or penetration of the air barrier system and the air barrier inspector to discuss where each subcontractor begins and ends, the sequence of installation, and each subcontractor's responsibility to ensure airtight joints, junctures, penetrations and transitions between materials, products, and assemblies of products specified in the different sections to be installed by the different subcontractors.

1.7.3 Construction Mock-Up

The Contractor shall build a construction mock-up of every joint, juncture, and transition between materials, products, and assemblies of products specified in the different sections to be installed. Work will not begin until the mock-up is satisfactory to the Contracting Officer.

1.8 AIR BARRIER SYSTEM PERFORMANCE REQUIREMENTS

The air leakage of the entire building shall meet the air requirements as specified in paragraph BUILDING AIR TIGHTNESS TEST.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 REPAIR AND PROTECTION

Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or sample taking and similar services. Upon completion of inspection, testing, or sample taking and similar services, the Contractor shall repair damaged construction and restore substrates and finishes, protect construction exposed by or for quality control service activities, and protect repaired construction.

3.2 TESTING AND INSPECTION

The following qualitative and quantitative tests and inspections shall be conducted by the Contractor in the presence of the Contracting Officer during installation of the air barrier system.

1. Qualitative Testing and Inspection:

- a. Provide a Daily Report of Observations with a copy to the Contracting Officer.
- b. Ensure continuity of the air barrier system throughout the building enclosure and that all gaps are covered, the covering is structurally sound, and all penetrations are sealed allowing for no infiltration or exfiltration through the air barrier system.
- c. Ensure structural support of the air barrier system to withstand design air pressures.
- d. Ensure masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions and mortar droppings, with mortar joints struck flush or as required by the manufacturer

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of the air barrier material.

- e. Ensure site conditions for application temperature, and dryness of substrates are within guidelines.
- f. Ensure substrate surfaces are properly primed.
- g. Ensure laps in materials are at least a 2-inch minimum, shingled in the correct direction or mastic applied on exposed edges with no fishmouths.
- h. Ensure that mastic is applied on cut edges.
- i. Ensure that a roller has been used to enhance adhesion.
- j. Measure application thickness of liquid applied materials to manufacturer's specifications for the specific substrate.
- k. Ensure that the correct materials are installed for compatibility.
- l. Ensure proper transitions for change in direction and structural support at gaps.
- m. Ensure proper connection between assemblies (membrane and sealants) for cleaning, preparation and priming of surfaces, structural support, integrity and continuity of seal.

2. Quantitative Tests:

- a. Provide written test reports of all tests performed with a copy to the Contracting Officer.
- b. Determine the bond strength of coatings to substrate in accordance with ASTM D 4541.

3.3 BUILDING AIR TIGHTNESS TEST

A building air test shall follow the guidance in the U.S. Army Corps of Engineers Air Leakage Test Protocol for Measuring Air Leakage in Buildings. This protocol is available on the Whole Building Design Guide website- http://www.wbdg.org/references/pa_dod_energy.php. The fan pressurization test to determine final compliance with the airtightness requirement shall be conducted when all components of the air barrier system have been installed and inspected, and have passed any intermediate testing procedures as detailed in the construction drawings and specifications. The test may be conducted before finishes that are not part of the air barrier system have been installed. For example, if suspended ceiling tile, interior gypsum board, or cladding systems are not part of the air barrier system, the test may be conducted before they are installed.

3.3.1 Test Requirements

The air leakage test must be performed in accordance with ASTM E 779 with the following additions and exceptions:

The test consists of measuring the flow rates required to establish a minimum of 12 positive and 12 negative building pressures. The lowest test

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pressure shall be 25 Pa; the highest test pressure shall be 75 Pa; and there must be at least 25 Pa difference between the lowest and highest test pressures.

The test pressure must be measured in a representative location such that pressures in the extremities of the enclosure can be shown to not exceed 10 percent of the measured test pressure. At least 12 bias pressure readings must be taken across the envelope and averaged over at least 20 seconds each before and after the flow rate measurements. None of the bias pressure readings must exceed 30 percent of the minimum test pressure when testing in both directions.

Where it can be shown that it is impossible to test in both directions, then the building may be tested in the positive direction only, provided the bias pressure does not exceed 10 percent of the minimum test pressure.

The mean value of the air leakage flow rate calculated from measured data at 0.3 in wg (75 Pa) must not exceed 0.25 cu ft/ minute per square foot of envelope area (0.25 CFM75/ft²) and the upper confidence limit as defined by ASTM E 779 must not exceed (0.27 CFM75/ft²) or the upper confidence limit must not exceed (0.25 CFM75/ft²). Measurements must be referenced at standard conditions of 14.696 psi (101.325 KPa) and 68F (20C). The envelope area is to be supplied and/or confirmed by the Designer of Record (DOR).

The test shall be conducted with ventilation fans and exhaust fans turned off and the outdoor air inlets and exhaust outlets sealed (by dampers or masking). The Contractor must provide a responsible HVAC technician with the authority to place the HVAC system in the correct mode for the pressure test. The test technician must have unhindered access to mechanical rooms, air handlers, exhaust fans, and outdoor air and exhaust dampers.

The Contractor must ensure that all windows in the enclosure are kept closed. Entry and exit through doors in the test enclosure must be prohibited during the test. Data collected while the pressures and flows are affected by a door opening and closing shall be discarded.

The testing agency is required to perform a diagnostic evaluation in accordance with ASTM E 1186, whether the building achieves the air tightness requirement or not. The diagnostic evaluation will assist the Contractor and responsible parties in identifying and eliminating air leakage so the building meets the requirement upon retesting. The testing results will also be expressed in terms of the Equivalent Leakage Area (EqLA) at 75 Pa. The EqLA is a the equivalent area of a flat plate that leaks the same amount as the building envelope at 75 Pa.

3.4 THERMOGRAPHY TEST

The building envelope shall be tested using Infrared Thermography technology. The thermography testing shall be completed in accordance with the requirements of ASTM C 1060 and ISO 6781. The Contracting Officer shall witness the testing. Testing shall occur just before the building air tightness test. Testing shall also occur during the air tightness test so that areas of building air leaks are detected. If the building air tightness test is failed, Thermographic testing shall be repeated just before and during subsequent air tightness tests until the air tightness test is successful. The Contractor shall provide a report. The report shall include thermographs in color and a color temperature scale to define the temperature indicated by the various colors. The report shall identify

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the high temperature reading, the outdoor air temperature, the building indoor air temperature, and the wind speed and direction. The report shall note any areas of compromise in the building envelope, and shall note all actions required and taken to correct those areas. Final thermography test report shall demonstrate the problem areas have been corrected. The complete test and analysis will be submitted to the Government for review and approval.

--End of Section--

Appendix EE

Temporary Storm Water Pollution Control

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SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2004) Geosynthetics
ASTM D 4491	(1999a; R 2009) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(2004; R 2009) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(2008) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002; R 2009) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.2 SYSTEM DESCRIPTION

The work consists of implementing the storm water pollution prevention measures to minimize erosion from the cleared site and to prevent sediment from entering streams, water bodies, or wetland areas during the construction phase of the Work and the requirements of the Wisconsin general water permit No. WI-S067831-3. The Wisconsin Department of Natural Resources (WDNR) requires projects involving grading, demolition, and new construction that results in the disturbance of more than 1 acre to comply with the guidelines for storm water discharge regulations under the Wisconsin Pollutant Discharge Elimination System (WPDES).

1.3 EROSION AND SEDIMENT CONTROLS

The controls and measures required of the Contractor are described below.

1.3.1 Stabilization Practices

The stabilization practices to be implemented include temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control mats, protection of trees, preservation of mature vegetation, etc. On the daily CQC Report, record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on

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a portion of the site; and when stabilization practices are initiated.

1.3.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases or is precluded by unsuitable conditions caused by the weather, initiate stabilization practices as soon as practicable after conditions become suitable.

1.3.1.2 Burning

The Contractor shall obtain pre-approval for onsite open burning from the Mt. McCoy Environmental Division and local fire department for brush, trees, and stumps from site clearing activities per WDNR guidance. Coordinate with the local Fire Department 5 days before burning. No burn permit is required. Monitor fires continuously until fires have been burned out or have been extinguished.

1.3.1.3 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified, and protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

1.3.2 Erosion, Sediment, and Storm Water Control

Storm Water Notice of Intent (NOI) for Construction Activities disturbing more than 1 acre is required to be submitted to the WDNR within 14 days of commencing construction activities in order to be eligible for coverage under the general WPDES permit.

For this Project, the WDNR recommends that a separate erosion control plan and storm water management plan be included with the NOI submittal package. The NOI submittal package must be mailed directly to Mr. Alan Balliett, U.S. Army, Fort McCoy, for final review at least 30 days prior to commencing any land disturbing construction activities:

Mr. Alan Balliett, Chief, Environmental Division
U.S. Army, Fort McCoy
2171 South 8th Avenue
Fort McCoy, WI 54656
Alan.balliett@us.army.mil
Tel. (608)-388-4776

The Contractor will also include the permit fee made out to WDNR in the NOI submittal package. Fort McCoy will mail the final NOI package to WDNR within 14 days of Contractor construction activities. If the WDNR has not notified the Contractor or Fort McCoy within 14 days from receipt of submittal, the project may commence.

Additionally, the NOI storm water package requires Project site modeling using WINSLAMM or a similar Department approved computer model to determine long-term soil loss using a 2-year/24-hour storm. Pictures of the Site and a 7.5-minute USGS map of the Site are required in the package.

The construction site erosion control plan shall include, at a minimum, the following items:

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- a. Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographical map.
- b. Description of the intended timing and sequence of major land disturbing construction activities for major portions of the construction site, such as grubbing, excavating, or grading.
- c. Estimates of the total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing construction activities.
- d. Available data describing the surface soil as well as subsoils.
- e. Name of immediate named receiving water from the United States Geological Survey 7.5-minute series topographic maps, and whether the receiving water is an outstanding resource water (ORW), exceptional resource water (ERW) or an impaired water. An updated list of Wisconsin impaired water bodies are listed on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html> OR Ws and ERWs are listed in NR 102.10 and 102.11, Wisconsin Administrative Code, ORWs and ERWs are also listed on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/>
- f. The construction site erosion control plan shall include a site map with the following items:
 1. Pre-existing topography and drainage patterns, roads and surface waters.
 2. Boundaries of the construction site.
 3. Drainage patterns and approximate slopes anticipated after major grading activities.
 4. Areas of soil disturbance.
 5. Location of major structural and non-structural controls identified in the construction site erosion control plan.
 6. Location of areas where stabilization practices will be employed.
 7. Areas that will be vegetated following land disturbing construction activities.
 8. Area and location of wetland acreage on the construction site and locations where storm water is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.
 9. Areas that will be used for infiltration of post-construction storm water runoff.
 10. An alphanumeric or equivalent coordinate system for the entire construction site.
 11. Additional items necessary to depict site-specific conditions.

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- g. The construction site erosion control plan shall include a description of appropriate erosion and sediment control BMPs that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The construction site erosion control plan shall clearly describe the appropriate erosion and sediment control BMPs for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control BMPs will be implemented. The description of erosion and sediment control BMPs shall include the following minimum requirements:
1. Description of the expected level of sediment control on the construction site that achieves compliance with s. NR 151.11 or 151.23, Wisconsin Administrative Code, where applicable.
 2. Description of interim and permanent stabilization practices, including a schedule for implementing the practices. The construction site erosion control plan shall ensure that existing vegetation is preserved where feasible and that disturbed portions of the construction site are stabilized as soon as practicable.
 3. Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site.
 4. Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.
 5. Trapping of sediment in channelized flow.
 6. Staging land disturbing construction activities to limit exposed soil areas subject to erosion.
 7. Protection of downslope drainage inlets where they occur.
 8. Prevent tracking of sediment from the construction site onto roads and other paved surfaces.
 9. Prevent the discharge of sediment as part of site dewatering.
 10. Protect separate storm drain inlet structures from receiving sediment.
 11. Clean up of offsite sediment deposits.
 12. Stabilization of drainage ways.
 13. Installation of permanent stabilization practices as soon as possible after final grading.
 14. Description of erosion and sediment control practices put in place for the winter to prevent soil from leaving the construction site during periods of winter and spring thaw and rains.
 15. Use and storage of chemicals, cement, and other compounds and materials used on the construction site shall be managed during the construction period to prevent their transport by runoff into waters of the state.

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16. Minimization of dust to the maximum extent practicable.

17. Additional items necessary to address site-specific conditions.

- h. Sediment control BMPs shall be constructed and placed in operation prior to runoff entering waters of the state. Note: While regional treatment facilities are appropriate for control of post-construction pollutants they should not be used for construction site sediment removal.
- i. No solid materials, including building materials, may be discharged in violation of Chapters 30 and 31, Wis. Stats., or 33 USC 1344 or a U.S. Army Corps of Engineers Section 404 permit issued under 33 USC 1344.
- j. Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive flow from the structure to a watercourse so that the natural physical and biological characteristics and functions of the watercourse are maintained and protected.
- k. Runoff settling basins and pit/trench dewatering settling basins, if used, shall be constructed and operated in accordance with good engineering practices and design standards, and as follows:
 - 1. Basins shall discharge to a vegetated or otherwise stabilized area protected from erosion. The principal spillway shall discharge at the bottom of the embankment.
 - 2. When the accumulated sediment reaches one-half the height of the sediment control structure, or one-half the depth of the permanent pool, the sediment shall be removed. Materials removed from basins shall be properly disposed of in a manner that will not pollute waters of the state.
 - 3. Consideration should be given to installing fences around construction site settling basins for human safety.
- l. All maintenance shall be done in accordance with Department-approved technical standards. Where measures are not in accordance with Department-approved technical standards, a description of the procedures used to maintain effective operating conditions of vegetation, erosion and sediment control measures and other protective measures shall be identified in the erosion control plan.
- m. The construction site erosion control plan shall clearly identify the contractor(s) and subcontractor(s) that will install and maintain erosion and sediment control measures. This information may be added to the plan after the NOI has been submitted to Department. It shall be included in the plan prior to the commencement of land disturbing construction activities.

1.3.3 Storm Water Management Plan

- a. The storm water management plan shall meet the applicable performance standards in NR 151.12, Wisconsin Administrative Code for construction sites that are not transportation facilities. These performance standards include requirements for total suspended solids, peak flow, infiltration, protective areas, and fueling and vehicle maintenance areas.

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- b. The storm water management plan shall address pollution caused by storm water discharges from the site after construction is completed which includes: rooftops, parking lots, roadways, and the maintenance of grassed areas.
- c. The storm water management plan shall include an explanation of the technical basis used to select Best Management Practices (BMPs). The BMPs to control impacts from storm water runoff include infiltration systems, wet detention ponds, constructed wetlands, grassed swales, vegetative protective areas, reduced imperviousness, beneficial reuse such as irrigation or toilet flushing, combinations of these practices, or other methods which do not cause significant adverse impact on the receiving surface water or groundwater. Note: Department-approved storm water management technical standards can be obtained through the through the Department storm water Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>, or contact the Department storm water program in the Bureau of Watershed Management at (608) 267-7694 to get information on how to obtain storm water management standards.

1.3.4 Storm Water Drainage

There will be no discharge of excavation ground water to the sanitary sewer, storm drains, or to the wetland without prior specific authorization of the local authority in writing. Discharge of hazardous substances will not be permitted under any circumstances. Construction site runoff will be prevented from entering the wetland directly by the use of straw bales or other method suitable to the local authority. Provide erosion protection of the surrounding soils.

1.3.5 Structural Practices

Prepare plan of the Site work to implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement structural practices in a timely manner, during the construction process, to minimize erosion and sediment runoff. Include the following devices;

1.3.5.1 Silt Fences

Contractor shall provide silt fences as defined in the plan as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Install silt fences in the locations indicated on the drawings. Obtain approval from the Contracting Officer prior to final removal of silt fence barriers.

1.3.5.2 Straw Bales

Contractor shall provide bales of straw as defined in the plan, if so used, as a temporary structural practice to minimize erosion and sediment runoff. If bales are used, properly place the bales to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge

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and drain, place the bales as work progresses, remove/replace/relocate the bales as needed for work to progress in the drainage area). Show on the drawings areas where straw bales are to be used. The Contracting Officer will approve the final removal of straw bale barriers. Provide rows of bales of straw as follows:

- a. Along the downhill perimeter edge of all areas disturbed.
- b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.
- c. Along the toe of all cut slopes and fill slopes of the construction areas.
- d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Space the rows a maximum of 200 feet apart.
- e. At the entrance to culverts that receive runoff from disturbed areas.
- f. At the bottom of all cut slopes in excess of 2.5H to 1V (for example, 2.4, 2.3, etc. to 1).

1.3.5.3 Diversion Dikes or Ditches

Build with a maximum channel slope of 0.5 percent and adequately compacted to prevent failure. The minimum height or depth measured from the top of the dike to the bottom of the channel shall be 18 inches. For dikes, the minimum base width shall be 6 feet and the minimum top width shall be 2 feet. Ensure that the diversion dikes are not damaged by construction operations or traffic.

1.3.6 Sediment Basins

Trap sediment in temporary or permanent sediment detention basins. For temporary basins, select a basin size to accommodate the runoff of a local 10-year storm. Pump dry if the basin has not drained within 24 hours after each storm event and remove the accumulated sediment, after each storm. Use a paved weir or vertical overflow pipe for overflow. Remove collected sediment from the site. Institute effluent quality monitoring programs. Install, inspect, and maintain best management practices (BMPs) as required by the general permit. Prepare BMP Inspection Reports as required by the general permit. If required by the permit, include those inspection reports.

1.3.7 Vegetation and Mulch

- a. Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.
- b. Seeding: Provide new seeding where ground is disturbed either by the initial clearing by others or by the clearing and grubbing associated with stump and large root removal as soon as the moisture conditions and soil moisture and temperature allow. Include topsoil or nutriment

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during the seeding operation necessary to establish or reestablish a suitable stand of grass.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Storm Water Pollution Prevention Plan
Storm Water Notice of Intent

Pollution prevention plan and Notice of intent for WPDES coverage under the general permit for construction activities

SD-06 Test Reports

Storm Water Inspection Reports for General Permit
Erosion and Sediment Controls

SD-07 Certificates

Mill Certificate or Affidavit

Certificate attesting that the Contractor has met all specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

Identify, store and handle filter fabric in accordance with ASTM D 4873.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

Provide geotextile that complies with the requirements of ASTM D 4439, and consists of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and contains stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. Provide synthetic filter fabric that contains ultraviolet ray inhibitors and stabilizers to assure a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (percent)		30 percent max.

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FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

Use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 by 2 inches when oak is used and 4 by 4 inches when pine is used, and have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds/linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

Provide a mill certificate or affidavit attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. Specify in the mill certificate or affidavit the actual Minimum Average Roll Values and identify the fabric supplied by roll identification numbers. Submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.2 COMPONENTS FOR STRAW BALES

If a requirement of the State or County, all straw will be certified weed free. The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. Provide bales with a standard cross section of 14 by 18 inches. Wire-bound or string-tie all bales. Use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 by 2 inches in cross section and have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33 pounds/linear foot and a minimum length of 3 feet.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Extend silt fences a minimum of 16 inches above the ground surface without exceeding 34 inches above the ground surface. Provide filter fabric from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, splice together filter fabric at a support post, with a minimum 6 inch overlap, and securely sealed. Excavate trench approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4 by 4 inch trench shall be backfilled and the soil compacted over the filter fabric. Remove silt fences upon approval by the Contracting Officer.

3.2 INSTALLATION OF STRAW BALES

Place the straw bales in a single row, lengthwise on the contour, with ends

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of adjacent bales tightly abutting one another. Install straw bales so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. Entrench and backfill the barrier. Excavate a trench the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), backfill the excavated soil against the barrier. Conform the backfill soil with the ground level on the downhill side and build up to 4 inches against the uphill side of the barrier. Scatter loose straw over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Securely anchor each bale by at least two stakes driven through the bale. Drive the first stake or steel post in each bale toward the previously laid bale to force the bales together. Drive stakes or steel pickets a minimum 18 inches deep into the ground to securely anchor the bales.

3.3 FIELD QUALITY CONTROL

Maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. Use the following procedures to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Inspect the silt fences in accordance with paragraph, titled "Inspections," of this section. Any required repairs shall be made promptly. Pay close attention to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, replace the fabric promptly. Remove sediment deposits when deposits reach one-third of the height of the barrier. Remove a silt fence when it is no longer required. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade.

3.3.2 Straw Bale Maintenance

Inspect straw bale barriers in accordance with paragraph, titled "Inspections". Pay close attention to the repair of damaged bales, end runs and undercutting beneath bales. Accomplish necessary repairs to barriers or replacement of bales in a promptly manner. Remove sediment deposits when deposits reach one-half of the height of the barrier. At the each end of each row turn bales uphill when used to retain sediment. Remove a straw bale barrier when it is no longer required. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade.

3.3.3 Diversion Dike and Ditches Maintenance

Inspect diversion dikes and ditches in accordance with paragraph, titled "Inspections," of this section. Pay close attention to the repair of damaged diversion dikes and ditches and accomplish necessary repairs promptly. When diversion dikes and ditches are no longer required, shape to an acceptable grade.

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3.4 INSPECTIONS

3.4.1 General

Inspect disturbed areas of the construction site, areas that have not been finally stabilized used for storage of materials exposed to precipitation, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inch or more rainfall at the site. Conduct inspections at least once every month where sites have been finally stabilized.

3.4.2 Inspections Details

Inspect disturbed areas and areas used for material storage that are exposed to precipitation for evidence of, or the potential for, pollutants entering the drainage system. Observe erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan to ensure that they are operating correctly. Inspect discharge locations or points to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Inspect locations where vehicles exit the site for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. Furnish the report to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

Appendix FF

Commissioning of Building Energy Systems

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SECTION 01 46 00.00 06

COMMISSIONING OF BUILDING ENERGY SYSTEMS

PART 1 GENERAL

Commissioning of the HVAC, Lighting Control, Domestic Hot Water, Renewable Energy, and On-Site Power systems is the responsibility of the Contractor. The Contractor shall employ the services of an independent Commissioning Agent. The Commissioning Agent shall coordinate all aspects of the commissioning process. Commissioning procedures shall conform to the procedures outlined in this specification.

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-05 Design Data;

Design Review Report; G, ED.

Completed report individually listing each deficiency and the corresponding proposed corrective action shall be submitted concurrent with the submission of the final design.

Commissioning Plan; G, ED.

Outline of the overall commissioning process; the schedule for Pre-Commissioning Checks, Functional Performance Tests, Training, Turn-Over Instruction, and Building Operation Review as applicable; list of team members who will represent the Contractor during Pre-Commissioning Checks and Functional Performance Tests; Pre-Commissioning Check lists and Functional Performance Tests lists for each building, each system, and each component; shall be submitted at least 14 calendar days prior to start of pre-commissioning checks.

SD-06 Test Reports

Final Commissioning Report Reports; G, ED.

Completed pre-commissioning checklists and functional performance test checklists organized by system and by subsystem and submitted as one package. The results of failed tests shall be included along with a description of the corrective action taken. The report shall include an executive summary of the commissioning process and results and include any seasonal testing scheduled for a later date. The report shall indicate whether systems meet the requirements of the Owner's Project Requirements and the Basis of Design. The training video shall be included. The report shall be submitted no later than 14 calendar days after completion of

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Functional Performance Testing.

SD-07 Certificates

Commissioning Agent; G, ED

The Commissioning Agent shall be a NEBB qualified Systems Commissioning Administrator (SCA) employed by a NEBB certified firm with a minimum of three years of HVAC commissioning experience and at least two projects of similar size and scope; or an AABC Certified Commissioning Agent (CCA) employed by an AABC certified firm with a minimum of three years of HVAC commissioning experience and at least two projects of similar size and scope; or a Professional Engineer (P.E.) with a minimum of five years of HVAC design experience who is not associated with the design of this project, is licensed in the state where this project is located, and has a minimum of three years of HVAC commissioning experience and at least two projects of similar size and scope. The Commissioning Agent's certification of qualifications including the Commissioning Agent's name and firm shall be submitted no later than 30 calendar days after Notice to Proceed. The Commissioning Agent's contract including the Scope of Work for Building Operation Review shall be submitted with the Commissioning Agent's qualifications

Certificate of Readiness; G, RE.

Statement issued by the Contractor and signed by the Contractor, the Commissioning Agent, and all other Contractor's Representatives on the Commissioning Team certifying that all equipment, systems, and controls are complete and ready for Functional Performance Tests. Includes start-up reports, completed Pre-Commissioning Checklists, Performance Verification Test Report, and the TAB Report. Submit no later than 14 calendar days prior to Functional Performance Tests.

SD-10 Operation and Maintenance Data

Systems Manual; G, ED.

Completed manual including the Basis of Design and, for all commissioned systems, the single line diagrams, the as-built sequences of operation, the control drawings, original setpoints, operating instructions, recommended schedule of maintenance if not in the O&M manual, and the recommended schedule for calibrating sensors and actuators. The Systems Manual shall be submitted no later than 14 calendar days after completion of Functional Performance Testing.

1.2 Certificate of Readiness

The Contractor shall issue a Certificate of Readiness certifying that the building energy systems are ready for Functional Performance Testing. The Certificate of Readiness shall include all equipment and system start-up reports, Performance Verification Test Reports, Pre-Commissioning Checklists, TAB Report, and the Building Air Tightness Test Report. The Contractor, the Commissioning Agent, and the Contractor's Quality Control, Mechanical, Electrical, Controls, and Testing, Adjusting, and Balancing Representatives shall sign and date the Certificate of Readiness.

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1.3 COMMISSIONING ACTIVITIES

The Contractor shall be responsible for the following procedures described in this specification:

a. Preconstruction Commissioning Meeting - The Commissioning Agent, the Contractor, the Contractor's Quality Control Representative, and the Government shall meet and discuss the commissioning process to include all requirements and submittals as specified in this section no later than 14 days after approval of the Commissioning Agent.

b. Design Review (Design-Build) - The Commissioning Agent shall review the Design Plans and Specifications, the Basis of Design, and the Owner's Project Requirements prior to 60% completion of the design. The Commissioning Agent shall assess the completeness and clarity of the Owner's Project Requirements, verify that the requirements stated in the Owner's Project Requirements are addressed in the Basis of Design, and verify that the Design Plans and Specifications are prepared in accordance with the Basis of Design and the Owner's Project Requirements. The Commissioning Agent shall backcheck the reviewed documents at 95% completion of the design. The Commissioning Agent shall provide a Design Review Report which shall identify any discrepancies between the reviewed documents, deviations in the design from the Basis of Design or Owner's Project Requirements, or deficiencies that would prevent the building energy systems from operating effectively in accordance with the sequence of operation. The Design Review Report shall individually list each deficiency and the corresponding proposed corrective action necessary for proper system operation. The report shall be submitted with the final design submission to the Government. The Contracting Officer's Representative, the Commissioning Agent, and the Designers shall meet, discuss, and resolve any items contained in the report no later than 14 calendar days after submission of the report.

c. Commissioning Plan - The Commissioning Agent shall prepare the Commissioning Plan. The Commissioning Plan shall outline the overall commissioning process, the commissioning schedule, the commissioning team members and responsibilities, and documentation requirements. The commissioning schedule shall include Pre-Commissioning Checks, Functional Performance Tests, Training, Turn-Over Instruction, and Building Operation Review as applicable. The Commissioning Agent shall prepare the Pre-Commissioning Checklists for each building, for each system, and for each component before the start of the checks. Appendix A provides examples of the minimum detail required for Pre-Commissioning Checklists. The Commissioning Agent shall prepare the Functional Performance Test lists for each building, for each system, and for each component before the start of the tests. Appendix B provides examples of the minimum detail required for Functional Performance Test Lists.

d. Construction - The Commissioning Agent shall review all building energy system related shop drawings and submittals and verify the submitted equipment complies with the contract requirements and the requirements of the Basis of Design and the Owner's Project Requirements. The Commissioning Agent shall review the status of the Pre-Commissioning Checklists, and shall verify the items on the checklists conform to the submittals, are installed in accordance with the manufacturer's recommendations, and are installed in compliance with the contract requirements and the requirements of the Basis of Design and the Owner's Project Requirements. The Commissioning Agent shall perform an onsite

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review and shall verify that the systems are in compliance with all specifications prior to the Functional Performance Tests.

e. Pre-Commissioning Checks - The Commissioning Agent, Contractor's Quality Control Representative, and the Government shall perform pre-commissioning checks and complete the Pre-Commissioning Checklists. Each applicable item in the checklist for each item of equipment shall be inspected and the checklist shall be initialed by the Commissioning Team. The Commissioning Team shall only initial items on the checklist that are complete and witnessed.

f. Testing, Adjusting, and Balancing (TAB) Verification Testing - After the TAB process is performed and the balance report is submitted, the Commissioning Agent shall perform a verification test. The extent of verification shall be to the discretion of the commissioning agent; however a minimum of 15% of all readings shall be verified. If readings deviate more than + or - 10% from the report the TAB contractor shall be directed to re-balance the system and submit new reports.

g. Pre-Functional Performance Test Meeting - The Commissioning Agent, the Contractor, the Contractor's Quality Control Representative, and the Government shall meet prior to Functional Performance Tests to determine if all Functional Performance Test Prerequisites have been completed and to discuss the reports submitted with the Certificate of Readiness and the Functional Performance Test procedures

h. Functional Performance Tests - The Commissioning Agent shall lead the Functional Performance Tests in accordance with the Commissioning Plan.

i. Systems Manual - The Commissioning Agent shall develop a system manual. The systems manual shall be a separate document from the Operating and Maintenance Manuals required by related sections. The system manual shall include the Basis of Design and, for all commissioned systems, the single line diagrams, the as-built sequences of operation, the control drawings, original setpoints, operating instructions, recommended schedule of maintenance if not in the O&M manual, and the recommended schedule for calibrating sensors and actuators.

j. Training - The Commissioning Agent shall schedule, supervise and video all training of the owner's maintenance staff on all building energy equipment and systems. The video shall be turned over to the COR as part of the final commissioning report for future reference. The Commissioning agent shall provide the video on the appropriate media as directed by the Contracting Officer's Representative.

k. Operating and Maintenance Manuals Turn-over - The Commissioning Agent shall assist and schedule the submission of all O&M Manuals and Warranties.

l. Turn-over Instruction - When the building energy systems are ready to be turned-over to the owner, the Commissioning Agent shall schedule a final session for operation and maintenance personnel instruction. The system design engineers, installing contractors, major equipment suppliers and any other interested parties should be in attendance. This instruction shall include a review of all systems and equipment operations, additional hands-on instruction where required and a question and answer period.

m. Final Commissioning Report - The Commissioning Agent shall prepare a Final Commissioning Report as required. The report shall include an executive summary of the commissioning process and results and include any

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seasonal testing scheduled for a later date. The report shall indicate whether systems meet the requirements of the Owner's Project Requirements and the Basis of Design. The report shall detail any deficiencies found during the testing and the corrective actions taken. The report shall include all Pre-Commissioning Checklists and Functional Performance Test Checklists, and any substantiating information.

n. Building Operation Review - The Commissioning Agent shall visit the building and review building energy system operation with operating staff and users 8 to 10 months after substantial completion. The Commissioning Agent shall advise the Contracting Officer's Representative of any outstanding construction deficiencies. The Systems Manual shall be updated with the list of deficiencies that will not be corrected. The updated Systems Manual shall be submitted no later than 14 calendar days after completion of Building Operation Review.

1.4 SEQUENCING AND SCHEDULING

The Functional Performance Tests described in this Section shall begin only after all work and testing required in related Sections, including Section 23 09 23 DIRECT DIGITAL CONTROL FOR HVAC AND OTHER LOCAL BUILDING SYSTEMS, LRL Section 07 25 00.00 06 BUILDING AIR BARRIER SYSTEM, and Section 23 05 93.00 10 TESTING, ADJUSTING AND BALANCING FOR HVAC, have been successfully completed, and after all test and inspection reports and operation and maintenance manuals required in these Sections have been submitted and approved.

The following shall be completed prior to Functional Performance Tests:

- a. All equipment and systems have been completed, calibrated, and operate in accordance with contract documents.
- b. Performance Verification Tests have been completed and the Performance Verification Test Report has been submitted. Performance Verifications Tests shall demonstrate that all physical and functional requirements of the contract have been met. The Contractor shall demonstrate that the control systems perform in accordance with the sequence of operations.
- c. Testing, Adjusting, and Balancing has been completed and the TAB Report has been submitted.
- d. The Building Air Tightness Tests have been completed and the Building Air Tightness Test Reports have been submitted.
- e. The Pre-Commissioning Checklists have been completed and submitted.
- f. The Certificate of Readiness has been submitted.
- g. The Pre-Functional Performance Test Meeting has occurred.

1.5 COMMUNICATION WITH THE GOVERNMENT

The Commissioning Agent shall submit all plans, schedules, reports, and documentation directly to the Contracting Officer's Representative concurrent with submission to the CQC System Manager. The Commissioning Agent shall have direct communication with the Contracting Officer's Representative regarding all elements of the commissioning process.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 COMMISSIONING TEAM AND CHECKLISTS

The Contractor shall designate team members to participate in the

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pre-commissioning checks and the functional performance testing specified herein.

The team members for pre-commissioning checks shall be as follows:

Designation	Function
QA	Contracting Officer's Quality Assurance Representative
QC	Contractor's Quality Control Representative
CA	Commissioning Agent

The team members for functional performance testing shall be as follows:

Contracting Officer's Quality Assurance Representative
Contractor's Quality Control Representative
Commissioning Agent
Contractor's Controls Representative
Contractor's Testing, Adjusting, and Balancing Representative
Design Agent's Representative

The following may be required to participate as team members during Pre-Commissioning Checks and Functional Performance Testing at the request of the Commissioning Agent:

Contractor's Mechanical Representative
Contractor's Electrical Representative
Using Agent's Representative

The commissioning team shall complete the Pre-Commissioning Check Lists and the Functional Performance Tests lists prepared by the Commissioning Agent. Acceptance by each commissioning team member of each pre-commissioning checklist item shall be indicated by initials and date. Acceptance by each commissioning team member of each functional performance test checklist shall be indicated by signature and date.

3.2 TESTS

The pre-commissioning checks and functional performance tests shall be performed in a manner which essentially duplicates the checking, testing, and inspection methods established in the related Sections. Where checking, testing, and inspection methods are not specified in other Sections, methods shall be established to verify that the system is installed and performs in accordance with contract documents. Testing and verification shall demonstrate that all HVAC components have been installed, that each control device and item of equipment operates, and that the system operates in accordance with contract documents. Requirements in related Sections are independent from the requirements of this Section and shall not be used to satisfy any of the requirements specified in this Section. The Contractor shall provide all materials, services, and labor required to perform the pre-commissioning checks and functional performance tests. A pre-commissioning check or functional performance test shall be aborted if any system deficiency prevents the successful completion of the test or if any participating non-Government commissioning team member of which participation is specified is not present for the test. The Contractor shall reimburse the Government for all costs associated with effort lost due to tests that are aborted. These costs shall include salary, travel costs and per diem (where applicable) for Government commissioning team members.

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3.2.1 Pre-Commissioning Checks

Pre-commissioning checks shall be performed for ductwork, piping, each major item of equipment, and the control systems. Deficiencies discovered during these checks shall be corrected and retested in accordance with the applicable contract requirements.

3.2.2 Functional Performance Tests

Functional performance tests shall be performed for each major item of equipment, each HVAC system, and the HVAC control systems. Functional performance tests shall verify all control responses, safeties, interlocks, operating modes, capacities, and all other relevant contract requirements comply with contract documents. Functional performance tests shall begin only after all pre-commissioning checks have been successfully completed, the Certificate of Readiness has been submitted, and the Pre-Functional Performance Test Meeting has occurred. Tests shall prove all modes of the sequences of operation, and shall verify all other relevant contract requirements. Tests shall begin with equipment or components and shall progress through subsystems to complete systems. Upon failure of any functional performance test checklist item, the Contractor shall correct all deficiencies in accordance with the applicable contract requirements. The checklist shall then be repeated until it has been completed with no errors. If TAB Verification has not been completed prior to Functional Performance Testing, it shall be verified during Functional Performance Testing.

3.3 Building Operation Review

The Commissioning Agent shall visit the building site, inspect building energy system equipment, review building operation with the building operating/maintenance staff and/or users, and analyze control point trends. The operating staff shall have the responsibility for providing control point trends relevant to identified operating issues to the Commissioning Agent. The Commissioning Agent shall identify any deficiency of the building energy systems to operate in accordance with the Contract Plans and Specifications, the Basis of Design, and the Owner's Project Requirements. The Commissioning Agent shall advise the Contracting Officer's Representative of any identified deficiencies and the proposed corrective action. Any deficiency that will not be corrected, shall be documented. Documentation shall be provided to the Contracting Officer's Representative as an update to the Systems Manual.

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APPENDIX A

PRE-COMMISSIONING CHECKLISTS

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Pre-commissioning checklist - Piping

For _____ Piping System

Checklist Item

QA QC CA

Installation

a. Piping complete.	___	___	___
b. As-built shop drawings submitted.	___	___	___
c. Piping flushed and cleaned.	___	___	___
d. Strainers cleaned.	___	___	___
e. Valves installed as required.	___	___	___
f. Piping insulated as required.	___	___	___
g. Thermometers and gauges installed as required.	___	___	___
h. Verify operation of valves.	___	___	___
i. Air vents installed as specified.	___	___	___
j. Flexible connectors installed as specified	___	___	___
k. Verify that piping has been labeled and valves identified as specified.	___	___	___

Testing, Adjusting, and Balancing (TAB)

a. Hydrostatic test complete.	___	___	___
b. TAB operation complete.	___	___	___

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Pre-commissioning Checklist - Ductwork

For Air Handler: _____

Checklist Item

QA QC CA

Installation

- | | | | |
|--------------------------------------|-------|-------|-------|
| a. Ductwork complete. | _____ | _____ | _____ |
| b. As-built shop drawings submitted. | _____ | _____ | _____ |
| c. Ductwork leak test complete. | _____ | _____ | _____ |

NOTE: The first bracketed item will be used for Army projects, the second for Air Force projects.

- | | | | |
|--|-------|-------|-------|
| d. Fire dampers, smoke dampers, and
access doors installed as required. | _____ | _____ | _____ |
| e. Ductwork insulated as required. | _____ | _____ | _____ |
| f. Thermometers and gauges installed as required. | _____ | _____ | _____ |
| g. Verify open/closed status of dampers. | _____ | _____ | _____ |
| h. Verify smoke dampers operation. | _____ | _____ | _____ |
| i. Flexible connectors installed as specified | _____ | _____ | _____ |

Testing, Adjusting, and Balancing (TAB)

- | | | | |
|----------------------------|-------|-------|-------|
| a. TAB operation complete. | _____ | _____ | _____ |
|----------------------------|-------|-------|-------|

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Pre-commissioning Checklist - Variable Volume Air Handling Unit

For Air Handling Unit: _____

Checklist Item	QA	QC	CA
Installation			
a. Vibration isolation devices installed.	___	___	___
b. Inspection and access doors are operable and sealed.	___	___	___
c. Casing undamaged.	___	___	___
d. Insulation undamaged.	___	___	___
e. Condensate drainage is unobstructed. (Visually verify drainage by pouring a cup of water into drain pan.)	___	___	___
f. Fan belt adjusted.	___	___	___
g. Manufacturer's required maintenance clearance provided.	___	___	___
Electrical			
a. Power available to unit disconnect.	___	___	___
b. Power available to unit control panel.	___	___	___
c. Proper motor rotation verified.	___	___	___
d. Verify that power disconnect is located within sight of the unit it controls.	___	___	___
Coils			
a. Chilled water piping properly connected.	___	___	___
b. Chilled water piping pressure tested.	___	___	___
c. Hot water piping properly connected.	___	___	___
d. Hot water piping pressure tested.	___	___	___
e. Air vents installed on water coils with shutoff valves as specified.	___	___	___
f. Any damage to coil fins has been repaired.	___	___	___
Controls			
a. Control valves/actuators properly installed.	___	___	___
b. Control valves/actuators operable.	___	___	___
c. Dampers/actuators properly installed.	___	___	___
d. Dampers/actuators operable.	___	___	___

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- e. Verify proper location, installation and calibration of duct static pressure sensor.

- f. Fan air volume controller operable.

- g. Air handler controls system operational.

- Testing, Adjusting, and Balancing (TAB)
- a. Construction filters removed and replaced.

- b. TAB report submitted.

- c. TAB results within +10%/-0% of L/s cfm shown on drawings

- d. TAB results for outside air intake within +10%/-0% of both the minimum and maximum L/s cfms shown on drawings.

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Pre-commissioning Checklist - VAV Terminal

For VAV Terminal: _____

Checklist Item

QA QC CA

Installation

- | | | | |
|--|-------|-------|-------|
| a. VAV terminal in place. | _____ | _____ | _____ |
| b. VAV terminal ducted. | _____ | _____ | _____ |
| c. VAV terminal connected to controls. | _____ | _____ | _____ |
| d. Reheat coil connected to hot water pipe. | _____ | _____ | _____ |
| e. Manufacturer's required maintenance clearance provided. | _____ | _____ | _____ |

Controls

- | | | | |
|--|-------|-------|-------|
| a. Cooling only VAV terminal controls set. | _____ | _____ | _____ |
| b. Cooling only VAV controls verified. | _____ | _____ | _____ |
| c. Reheat VAV terminal controls set. | _____ | _____ | _____ |
| d. Reheat terminal/coil controls verified. | _____ | _____ | _____ |

Testing, Adjusting, and Balancing (TAB)

- | | | | |
|--|-------|-------|-------|
| a. Verify terminal maximum air flow set. | _____ | _____ | _____ |
| b. Verify terminal minimum air flow set. | _____ | _____ | _____ |
| c. TAB operation complete. | _____ | _____ | _____ |

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Pre-commissioning Checklist - DX Air Cooled Condensing Unit

For Condensing Unit: _____

Checklist Item	QA	QC	CA
Installation	___	___	___
b. Refrigerant pipe leak tested.	___	___	___
c. Refrigerant pipe evacuated and charged in accordance with manufacturer's instructions.	___	___	___
d. Check condenser fans for proper rotation.	___	___	___
e. Any damage to coil fins has been repaired.	___	___	___
f. Manufacturer's required maintenance/ operational clearance provided.	___	___	___
Electrical			
a. Power available to unit disconnect.	___	___	___
b. Power available to unit control panel.	___	___	___
c. Verify that power disconnect is located within sight of the unit it controls	___	___	___
Controls			
a. Unit safety/protection devices tested.	___	___	___
b. Control system and interlocks installed.	___	___	___
c. Control system and interlocks operational.	___	___	___

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Pre-commissioning Checklist - Pumps

For Pump: _____

Checklist Item

QA QC CA

Installation

- | | | | |
|--|-----|-----|-----|
| a. Pumps grouted in place. | ___ | ___ | ___ |
| b. Pump vibration isolation devices functional. | ___ | ___ | ___ |
| c. Pump/motor coupling alignment verified. | ___ | ___ | ___ |
| d. Piping system installed. | ___ | ___ | ___ |
| e. Piping system pressure tested. | ___ | ___ | ___ |
| f. Pump not leaking. | ___ | ___ | ___ |
| g. Field assembled couplings aligned to meet manufacturer's prescribed tolerances. | ___ | ___ | ___ |

Electrical

- | | | | |
|--|-----|-----|-----|
| a. Power available to pump disconnect. | ___ | ___ | ___ |
| b. Pump rotation verified. | ___ | ___ | ___ |
| c. Control system interlocks functional. | ___ | ___ | ___ |
| d. Verify that power disconnect is located within sight of the unit it controls. | ___ | ___ | ___ |

Testing, Adjusting, and Balancing (TAB)

- | | | | |
|--|-----|-----|-----|
| a. Pressure/temperature gauges installed. | ___ | ___ | ___ |
| b. Piping system cleaned. | ___ | ___ | ___ |
| c. Chemical water treatment complete. | ___ | ___ | ___ |
| d. Water balance complete. | ___ | ___ | ___ |
| e. Water balance with design maximum flow. | ___ | ___ | ___ |
| f. TAB Report submitted. | ___ | ___ | ___ |

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Pre-commissioning Checklist - Packaged Air Cooled Chiller

For Chiller: _____

Checklist Item	QA	QC	CA
Installation			
a. Chiller properly piped.	___	___	___
b. Chilled water pipe leak tested.	___	___	___
c. Verify that refrigerant used complies with specified requirements.	___	___	___
d. Any damage to coil fins has been repaired.	___	___	___
e. Manufacturer's required maintenance clearance provided.	___	___	___
Electrical			
a. Power available to unit disconnect.	___	___	___
b. Power available to unit control panel.	___	___	___
c. Separate power is supplied to electric heating tape.	___	___	___
d. Verify that power disconnect is located within sight of the unit it controls.	___	___	___
Controls			
a. Factory startup and checkout complete.	___	___	___
b. Chiller safety/protection devices tested.	___	___	___
c. Chilled water flow switch installed.	___	___	___
d. Chilled water flow switch tested.	___	___	___
e. Chilled water pump interlock installed.	___	___	___
f. Chilled water pump interlock tested.	___	___	___

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Pre-commissioning Checklist - Hot Water Boiler

For Boiler: _____

Checklist Item	QA	QC	CA
Installation			
a. Boiler flue installed.	_____	_____	_____
b. Boiler hot water piping installed.	_____	_____	_____
c. Boiler hot water piping tested.	_____	_____	_____
d. Boiler makeup water piping installed.	_____	_____	_____
e. Boiler fuel oil piping installed.	_____	_____	_____
f. Boiler fuel oil piping tested.	_____	_____	_____
g. Boiler gas piping installed.	_____	_____	_____
h. Boiler gas piping tested.	_____	_____	_____
i. Manufacturer's required maintenance clearance provided.	_____	_____	_____
Startup			
a. Boiler system cleaned and filled with treated water.	_____	_____	_____
b. Boiler safety/protection devices, including high temperature burner shut-off, low water cutoff, flame failure, pre and post purge, have been tested.	_____	_____	_____
c. Verify that PRV rating conforms to boiler rating.	_____	_____	_____
d. Boiler water treatment system functional.	_____	_____	_____
e. Boiler startup and checkout complete.	_____	_____	_____
f. Combustion efficiency demonstrated.	_____	_____	_____
Electrical			
a. Verify that power disconnect is located within sight of the unit served.	_____	_____	_____
Controls			
a. Hot water pump interlock installed.	_____	_____	_____
b. Hot water pump interlock tested.	_____	_____	_____
c. Hot water heating system balanced.	_____	_____	_____
d. Hot water heating controls operational.	_____	_____	_____

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Pre-commissioning Checklist - Fan Coil Unit

For Fan Coil Unit: _____

Checklist Item	QA	QC	CA
Installation			
a. Vibration isolation devices installed.	___	___	___
b. Access doors/removable panels are operable and sealed.	___	___	___
c. Casing undamaged.	___	___	___
d. Insulation undamaged.	___	___	___
e. Condensate drainage is unobstructed.	___	___	___
f. Fan belt adjusted.	___	___	___
g. Any damage to coil fins has been repaired.	___	___	___
h. Manufacturer's required maintenance clearance provided.	___	___	___
Electrical			
a. Power available to unit disconnect.	___	___	___
b. Power available to unit control panel.	___	___	___
c. Proper motor rotation verified.	___	___	___
d. Verify that power disconnect is located within sight of the unit it controls.	___	___	___
Coils			
a. Chilled water or refrigerant piping properly connected.	___	___	___
b. Chilled water or refrigerant piping pressure tested.	___	___	___
c. Hot water piping properly connected.	___	___	___
d. Hot water piping pressure tested.	___	___	___
Controls			
a. Control valves/actuators properly installed.	___	___	___
b. Control valves/actuators operable.	___	___	___
c. Verify proper location and installation of thermostat.	___	___	___
Testing, Adjusting, and Balancing (TAB)			
a. Construction filters removed and replaced.	___	___	___
b. TAB results +10%/-0% of L/s (cfm) shown on drawings	___	___	___

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c. TAB Report submitted.

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Pre-commissioning Checklist - Unit Heater

For Electric Cabinet or Unit Heater: _____

Checklist Item

QA QC CA

Installation

- | | | | |
|---|-----|-----|-----|
| a. Hot water piping properly connected. | ___ | ___ | ___ |
| b. Hot water piping pressure tested. | ___ | ___ | ___ |
| c. Air vent installed on hot water coil
with shutoff valve as specified. | ___ | ___ | ___ |
| d. Any damage to coil fins has been repaired. | ___ | ___ | ___ |
| e. Manufacturer's required maintenance/
operational clearance provided. | ___ | ___ | ___ |

Electrical

- | | | | |
|---|-----|-----|-----|
| a. Power available to unit disconnect. | ___ | ___ | ___ |
| b. Proper motor rotation verified. | ___ | ___ | ___ |
| c. Verify that power disconnect is located
within sight of the unit it controls. | ___ | ___ | ___ |
| d. Power available to electric heating coil. | ___ | ___ | ___ |

Controls

- | | | | |
|---|-----|-----|-----|
| a. Control valves properly installed. | ___ | ___ | ___ |
| b. Control valves operable. | ___ | ___ | ___ |
| c. Verify proper location and installation of thermostat. | ___ | ___ | ___ |

Testing, Adjusting, and Balancing (TAB)

- | | | | |
|--------------------------|-----|-----|-----|
| a. TAB Report submitted. | ___ | ___ | ___ |
|--------------------------|-----|-----|-----|

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Pre-commissioning Checklist - Exhaust Fan

For Exhaust Fan: _____

Checklist Item	QA	QC	CA
Installation			
a. Fan belt adjusted.	___	___	___
Electrical			
a. Power available to fan disconnect.	___	___	___
b. Proper motor rotation verified.	___	___	___
c. Verify that power disconnect is located within sight of the unit it controls.	___	___	___
Controls			
a. Control interlocks properly installed.	___	___	___
b. Control interlocks operable.	___	___	___
c. Dampers/actuators properly installed.	___	___	___
d. Dampers/actuators operable.	___	___	___
e. Verify proper location and installation of thermostat.	___	___	___
Testing, Adjusting, and Balancing (TAB)			
a. TAB results +10%/-0% to L/s (cfm) shown on drawings	___	___	___
b. TAB Report submitted.	___	___	___

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Pre-commissioning Checklist - Computer Room Unit

For Computer Room Unit: _____

Checklist Item	QA	QC	CA
Installation			
a. Unit properly supported.	___	___	___
b. Access doors are operable and sealed.	___	___	___
c. Casing undamaged.	___	___	___
d. Insulation undamaged.	___	___	___
e. Condensate drainage is unobstructed and routed to floor drain.	___	___	___
f. Fan belt adjusted.	___	___	___
g. Manufacturer's required maintenance operational clearance provided.	___	___	___
Electrical			
a. Power available to unit disconnect.	___	___	___
b. Proper motor rotation verified.	___	___	___
c. Proper motor rotation verified.	___	___	___
d. Verify that power disconnect is located within sight of the unit it controls.	___	___	___
e. Power available to reheat coils.	___	___	___
Coils/Humidifier			
a. Chilled water piping properly connected.	___	___	___
b. Chilled water piping pressure tested.	___	___	___
c. Hot water piping properly connected.	___	___	___
d. Hot water piping pressure tested.	___	___	___
e. Humidifier makeup water connected.	___	___	___
Controls			
a. Control valves operable.	___	___	___
b. Unit control system operable and verified.	___	___	___
c. Verify proper location and installation of thermostat.	___	___	___
Testing, Adjusting, and Balancing (TAB)			

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- a. Construction filters removed and replaced.

- b. TAB results +10%/-0% L/s (cfm) shown on drawings.

- c. TAB Report submitted.

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Pre-commissioning Checklist - HVAC System Controls

For HVAC System Control Including the Central Equipment

Checklist Item	QA	QC	CA
Installation			
a. As-built shop drawings submitted.	___	___	___
b. Layout of control panel matches drawings.	___	___	___
c. Framed instructions mounted in or near control panel.	___	___	___
d. Components properly labeled (on inside and outside of panel).	___	___	___
e. Control components piped and/or wired to each labeled terminal strip.	___	___	___
f. UMCS interface installed and suitable for integration as BPOC.	___	___	___
g. Control wiring and tubing labeled at all terminations, splices, and junctions.	___	___	___
h. Shielded wiring used on electronic sensors.	___	___	___
i. Air dryer installed as specified.	___	___	___
j. Water drain installed as specified.	___	___	___
Main Power and Control Air			
a. 110 volt AC power available to panel.	___	___	___
b. 138 kPa gauge (20 psig) compressed air available to panel.	___	___	___
Testing, Commissioning, and Balancing			
a. Testing, Commissioning, and Balancing Report submitted.	___	___	___

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Pre-commissioning Checklist - Single Zone or Outdoor Air Handling Unit

For Air Handling Unit: _____

Checklist Item	QA	QC	CA
Installation			
a. Vibration isolation devices installed.	___	___	___
b. Inspection and access doors are operable and sealed.	___	___	___
c. Casing undamaged.	___	___	___
d. Insulation undamaged.	___	___	___
e. Condensate drainage is unobstructed and trap is installed in accordance with the details.	___	___	___
f. Fan belt adjusted.	___	___	___
g. Any damage to coil fins has been repaired.	___	___	___
h. Manufacturer's required maintenance clearance provided.	___	___	___
Electrical			
a. Power available to unit disconnect.	___	___	___
b. Power available to unit control panel.	___	___	___
c. Proper motor rotation verified.	___	___	___
d. Verify that power disconnect is located within sight of the unit it controls.	___	___	___
e. Power available to electric heating coil.	___	___	___
Coils			
a. Chilled water or refrigerant piping properly connected.	___	___	___
b. Chilled water or refrigerant piping pressure tested.	___	___	___
c. Hot water piping properly connected.	___	___	___
d. Hot water piping pressure tested.	___	___	___
e. Air vents installed on water coils with shutoff valves as specified.	___	___	___
f. Any damage to coil fins has been repaired.	___	___	___
Controls			
a. Control valves/actuators properly installed.	___	___	___
b. Control valves/actuators operable.	___	___	___

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- c. Dampers/actuators properly installed.

- d. Dampers/actuators operable.

- e. Verify proper location and installation of thermostat.

- Testing, Adjusting, and Balancing (TAB)
- a. Construction filters removed and replaced.

- b. TAB results +10%/-0% L/s (cfm) shown on drawings.

- c. TAB Report submitted.

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Ft. McCoy, WI

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Pre-commissioning Checklist - Energy Recovery System

For Energy Recovery System: _____

Checklist Item	QA	QC	CA
Installation			
a. Recovery system piping installed.	_____	_____	_____
b. Recovery system piping tested.	_____	_____	_____
c. Air vent installed as specified.	_____	_____	_____
d. Manufacturer's required maintenance clearance provided.	_____	_____	_____
Startup			
a. Recovery system piping cleaned and filled.	_____	_____	_____
b. Converter startup and checkout complete.	_____	_____	_____
Controls			
a. Control valves/actuators properly installed.	_____	_____	_____
b. Control valves/actuators operable.	_____	_____	_____

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Ft. McCoy, WI

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Pre-commissioning Checklist - Heat Exchanger

For Heat Exchanger: ____

Checklist Item	QA	QC	CA
Installation			
a. Piping installed and connections are per manufacturers diagrams.	____	____	____
b. Piping tested.	____	____	____
c. Makeup water piping installed.	____	____	____
d. Air vent installed as specified.	____	____	____
e. Manufacturer's required maintenance clearance provided.	____	____	____
Startup			
a. System cleaned and filled.	____	____	____
b. Strainer is clean.	____	____	____

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Pre-commissioning Checklist - Domestic Hot Water Heater

For Water Heater: _____

Checklist Item	QA	QC	CA
Installation			
a. Water Heater flue installed.	_____	_____	_____
b. Water Heater hot water piping installed.	_____	_____	_____
c. Water Heater hot water piping tested.	_____	_____	_____
d. Water Heater makeup water piping installed.	_____	_____	_____
e. Water Heater fuel oil piping installed.	_____	_____	_____
f. Water Heater fuel oil piping tested.	_____	_____	_____
g. Water Heater gas piping installed.	_____	_____	_____
h. Water Heater gas piping tested.	_____	_____	_____
i. Water Heater insulation installed as required	_____	_____	_____
j. Manufacturer's required maintenance clearance provided.	_____	_____	_____
Startup			
a. Domestic water system cleaned, flushed, and filled with water.	_____	_____	_____
b. Water Heater safety/protection devices, including high temperature burner shut-off, low water cutoff, flame failure, have been tested.	_____	_____	_____
c. Water Heater startup and checkout complete.	_____	_____	_____
f. Combustion efficiency demonstrated.	_____	_____	_____
Electrical			
a. Verify that power disconnect is located within sight of the unit served.	_____	_____	_____
Controls			
a. Domestic water heating controls operational.	_____	_____	_____

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Pre-commissioning Checklist - Lighting System

For Lighting System: _____

Checklist Item	QA	QC	CA
Installation			
a. Light fixtures installed and operable.	_____	_____	_____
Electrical			
a. Power available to light fixtures.	_____	_____	_____
b. Power available to light sensors.	_____	_____	_____
c. Power available to occupancy sensors.	_____	_____	_____
Controls			
a. Controls operable.	_____	_____	_____
c. Verify proper location and installation of light sensors.	_____	_____	_____
d. Verify proper location and installation of occupancy sensors.	_____	_____	_____

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APPENDIX B

FUNCTIONAL PERFORMANCE TESTS CHECKLISTS

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Functional Performance Test Checklist - Pumps

For Pump: _____

Prior to performing this checklist, ensure that for closed loop systems, system is pressurized and the make-up water system is operational or, for open loop systems, that the sumps are filled to the proper level.

1. Activate pump start using control system commands (all possible combination, on/auto, etc.). ON _____ AUTO _____ OFF _____

a. Verify pressure drop across strainer:

Strainer inlet pressure _____	kPa (_____ psig)
Strainer outlet pressure _____	kPa (_____ psig)
Strainer inlet pressure _____	psig
Strainer outlet pressure _____	psig

b. Verify pump inlet/outlet pressure reading, compare to Testing, Adjusting, and Balancing (TAB) Report, pump design conditions, and pump manufacturer's performance.

DESIGN	TAB	ACTUAL
Pump inlet pressure (kPa gauge)	_____	_____
Pump outlet pressure (kPa gauge)	_____	_____

DESIGN	TAB	ACTUAL
Pump inlet pressure (psig)	_____	_____
Pump outlet pressure (psig)	_____	_____

c. Operate pump at shutoff and at 100 percent of designed flow when all components are in full flow. Plot test readings on pump curve and compare results against readings taken from flow measuring devices.

	SHUTOFF	100 percent
Pump inlet pressure (kPa gauge)	_____	_____
Pump outlet pressure	_____	_____
Pump flow rate (L/s)	_____	_____

	SHUTOFF	100 percent
Pump inlet pressure (psig)	_____	_____
Pump outlet pressure	_____	_____
Pump flow rate (gpm)	_____	_____

d. Operate pump at shutoff and at minimum flow or when all components are in full by-pass. Plot test readings on pump curve and compare results against readings taken from flow measuring devices.

	SHUTOFF	100 percent
Pump inlet pressure (kPa gauge)	_____	_____
Pump outlet pressure	_____	_____
Pump flow rate (L/s)	_____	_____

	SHUTOFF	100 percent
Pump inlet pressure (psig)	_____	_____
Pump outlet pressure	_____	_____

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Pump flow rate (gpm) _____

2. Verify motor amperage each phase and voltage phase to phase and phase to ground for both the full flow and the minimum flow conditions.

a. Full flow:

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

b. Minimum flow:

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

3. Unusual vibration, noise, etc.

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing Representative	_____
Contractor's Controls Representative	_____
Government Representative	_____
Using Agency's Representative	_____
Design Agency's Representative	_____
Commissioning Agent	_____

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Functional Performance Test Checklist - VAV Terminals

The Contracting officer will select VAV terminals to be spot-checked during the functional performance test. The number of terminals shall not exceed 10.

1. Functional Performance Test: Contractor shall demonstrate operation of selected VAV boxes as per specifications including the following:

a. Cooling only VAV boxes:

(1) Verify VAV box response to room temperature set point adjustment. Turn thermostat to 5 degrees F above ambient and measure maximum air flow. Turn thermostat to 5 degrees F below ambient and measure minimum air flow.

Maximum flow _____ L/s
Minimum flow _____ L/s

Maximum flow _____ cfm
Minimum flow _____ cfm

(2) Check damper maximum/minimum flow settings.

Maximum flow setting _____ L/s
Minimum flow setting _____ L/s

Maximum flow setting _____ cfm
Minimum flow setting _____ cfm

b. Cooling with reheat VAV boxes:

(1) Verify VAV box response to room temperature set point adjustment. Turn thermostat to 3 degrees C 5 degrees F above ambient and measure maximum air flow. Turn thermostat to 3 degrees C 5 degrees F below ambient and measure minimum air flow.

Maximum flow _____ L/s
Minimum flow _____ L/s

Maximum flow _____ cfm
Minimum flow _____ cfm

(2) Check damper maximum/minimum flow settings.

Maximum flow setting _____ L/s
Minimum flow setting _____ L/s

Maximum flow setting _____ cfm
Minimum flow setting _____ cfm

Reheat coil operation range (full open to full closed) _____

c. Fan powered VAV boxes:

(1) Verify VAV box response to sensor call for heating via set point adjustment. Changes to be cooling setpoint to heating set point and return to cooling set point. _____ Verify cooling damper closes to

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minimum position, blower fan energizes according to sequence of operation, and upon further drop in space temperature, heating coil activation and deactivation. _____

(2) Check primary air damper maximum/minimum flow settings.

Maximum flow setting _____ L/s

Minimum flow setting _____ L/s

(3) Check blower fan flow. _____ L/s

Maximum flow setting _____ cfm

Minimum flow setting _____ cfm

(3) Check blower fan flow. _____ cfm

(4) Verify free operation of fan backdraft damper (insure no primary air is being discharged through the recirculated air register).

(5) Verify that no recirculated air is being induced when box is in full cooling. _____

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative

Contractor's Mechanical Representative

Contractor's Electrical Representative

Contractor's Testing, Adjusting and Balancing Representative

Contractor's Controls Representative

Government Representative

Using Agency's Representative

Design Agency's Representative

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Functional Performance Test Checklist - Variable Volume Air Handling Unit

For Air Handling Unit: _____

Ensure that a slight negative pressure exists on inboard side of the outside air dampers throughout the operation of the dampers. Modulate OA, RA, and EA dampers from fully open to fully closed positions.

1. Functional Performance Test: Contractor shall verify operation of air handling unit as per specification including the following:

a. The following shall be verified when the supply and return fans operating mode is initiated:

- (1) All dampers in normal position. _____
- (2) All valves in normal position. _____
- (3) System safeties allow start if safety conditions are met. _____
- (4) VAV fan controller shall "soft-start" fan. _____

(5) Modulate all VAV boxes to minimum air flow and verify that the static pressure does not exceed the design static pressure Class shown.

b. Occupied mode of operation - economizer de-energized.

- (1) Outside air damper at minimum position. _____
 - (2) Return air damper open. _____
 - (3) Relief air damper at minimum position. _____
 - (4) Chilled water control valve modulating to maintain leaving air temperature set point. _____
 - (5) Fan VAV controller receiving signal from duct static pressure sensor and modulating fan to maintain supply duct static pressure set point.
-

c. Occupied mode of operation - economizer energized.

- (1) Outside air damper modulated to maintain mixed air temperature set point. _____
 - (2) Relief air damper modulates with outside air damper according to sequence of operation. _____
 - (3) Chilled water control valve modulating to maintain leaving air temperature set point. _____
 - (4) Hot water control valve modulating to maintain leaving air temperature set point. _____
 - (5) Fan VAV controller receiving signal from duct static pressure sensor and modulating fan to maintain supply duct static pressure set point.
-

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d. Unoccupied mode of operation

(1) All dampers in normal position. _____

(2) Verify low limit space temperature is maintained as specified
in sequence of operation. _____

e. The following shall be verified when the supply and return fans off
mode is initiated:

(1) All dampers in normal position. _____

(2) All valves in normal position. _____

(3) Fan de-energizes. _____

f. Verify the chilled water coil control valve operation by setting
all VAV's to maximum and minimum cooling.

	Max cooling	Min cooling
Supply air volume (_____ L/s)	_____	_____
Supply air temp. (_____ degrees C)	_____	_____
	Max cooling	Min cooling
Supply air volume _____ cfm)	_____	_____
Supply air temp. (_____ degrees F)	_____	_____

g. Verify safety shut down initiated by smoke detectors. _____

h. Verify safety shut down initiated by low temperature protection
thermostat. _____

2. Certification: We the undersigned have witnessed the above functional
performance tests and certify that the item tested has met the performance
requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Government Representative _____

Using Agency's Representative _____

Design Agency's Representative _____

Commissioning Agent _____

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Functional Performance Test Checklist - Single Zone Air Handling Unit

For Air Handling Unit: _____

1. Functional Performance Test: Contractor shall verify operation of air handling unit as per specification including the following:

a. The following shall be verified when the supply and return fans operating mode is initiated:

(1) All dampers in normal position. _____

(2) All valves in normal position. _____

(3) System safeties allow start if safety conditions are met. _____

b. Occupied mode of operation - economizer de-energized.

(1) Outside air damper at minimum position. _____

(2) Return air damper open. _____

(3) Relief air damper at minimum position. _____

(4) Chilled water control valve modulating to maintain space cooling temperature set point. _____

(5) Hot water control valve modulating to maintain space heating temperature set point input from outside air temperature controller. _____

c. Occupied mode of operation - economizer energized.

(1) Outside air damper modulated to maintain mixed air temperature set point. _____

(2) Relief air damper modulates with outside air damper according to sequence of operation. _____

(3) Chilled water control valve modulating to maintain space cooling temperature set point. _____

d. Unoccupied mode of operation

(1) All dampers in normal position. _____

(2) Verify low limit space temperature is maintained as specified in sequence of operation. _____

e. The following shall be verified when the supply and return fans off mode is initiated:

(1) All dampers in normal position. _____

(2) All valves in normal position. _____

(3) Fan de-energizes. _____

f. Verify cooling coil and heating coil operation by varying thermostat set point from cooling set point to heating set point and

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returning to cooling set point. _____

g. Verify safety shut down initiated by smoke detectors. _____

h. Verify safety shut down initiated by low temperature protection thermostat. _____

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing Representative	_____
Contractor's Controls Representative	_____
Government Representative	_____
Using Agency's Representative	_____
Design Agency's Representative	_____
Commissioning Agent	_____

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Functional Performance Test Checklist - Packaged Air Cooled Chiller

For Chiller: _____

1. Functional Performance Test: Contractor shall demonstrate operation of chilled water system as per specifications including the following: Start building air handler to provide load for chiller. Activate controls system chiller start sequence as follows.

a. Start chilled water pump and establish chilled water flow. Verify chiller-chilled water proof-of-flow switch operation. _____

b. Verify control system energizes chiller start sequence. _____

c. Verify chiller senses chilled water temperature above set point and control system activates chiller start. _____

d. Verify functioning of "soft start" sequence. _____

e. Shut off air handling equipment to remove load on chilled water system. Verify chiller shutdown sequence is initiated and accomplished after load is removed. _____

f. Restart air handling equipment one minute after chiller shut down. Verify chiller restart sequence. _____

2. Verify chiller inlet/outlet pressure reading, compare to Testing, Adjusting, and Balancing (TAB) Report, chiller design conditions, and chiller manufacturer's performance data.

		DESIGN	TAB	ACTUAL
Chiller inlet pressure	(kPa gauge)	_____	_____	_____
Chiller inlet pressure	(psig)	_____	_____	_____
Chiller outlet pressure	(kPa gauge)	_____	_____	_____
Chiller outlet pressure	(psig)	_____	_____	_____

3. Verify chiller amperage each phase and voltage phase-to-phase and phase-to-ground.

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

4. Record the following information:

Ambient dry bulb temperature _____ degrees C
Ambient wet bulb temperature _____ degrees C
Entering chilled water temperature _____ degrees C
Leaving chilled water temperature _____ degrees C

Ambient dry bulb temperature _____ degrees F
Ambient wet bulb temperature _____ degrees F
Entering chilled water temperature _____ degrees F
Leaving chilled water temperature _____ degrees F

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5. Unusual vibration, noise, etc.

6. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative	<hr/>
Contractor's Mechanical Representative	<hr/>
Contractor's Electrical Representative	<hr/>
Contractor's Testing, Adjusting and Balancing Representative	<hr/>
Contractor's Controls Representative	<hr/>
Government Representative	<hr/>
Using Agency's Representative	<hr/>
Design Agency's Representative	<hr/>
Commissioning Agent	<hr/>

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Functional Performance Test Checklist - Air Cooled Condensing Unit

For Condensing Unit: _____

1. Functional Performance Test: Contractor shall demonstrate operation of refrigeration system as per specifications including the following: Start building air handler to provide load for condensing unit. Activate controls system start sequence as follows.

a. Start air handling unit. Verify control system energizes condensing unit start sequence. _____

b. Shut off air handling equipment to verify condensing unit de-energizes. _____

c. Restart air handling equipment one minute after condensing unit shut down. Verify condensing unit restart sequence. _____

2. Verify condensing unit amperage each phase and voltage phase to phase and phase to ground.

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage	_____	_____	_____
Voltage	_____	_____	_____
Voltage to ground	_____	_____	_____

3. Record the following information:

Ambient dry bulb temperature	_____	degrees C
Ambient wet bulb temperature	_____	degrees C
Suction pressure	_____	kPa gauge
Discharge pressure	_____	kPa gauge

Ambient dry bulb temperature	_____	degrees F
Ambient wet bulb temperature	_____	degrees F
Suction pressure	_____	psig
Discharge pressure	_____	psig

4. Unusual vibration, noise, etc.

5. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative Representative _____

Contractor's Testing, Adjusting and Balancing _____

Contractor's Controls Representative _____

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Government Representative

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Design Agency's Representative

Commissioning Agent

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Functional Performance Test Checklist - Hot Water Boiler

For Boiler: _____

1. Functional Performance Test: Contractor shall demonstrate operation of hot water system as per specifications including the following: Start building heating equipment to provide load for boiler. Activate controls system boiler start sequence as follows.

a. Start hot water pump and establish hot water flow. Verify boiler hot water proof-of-flow switch operation. _____

b. Verify control system energizes boiler start sequence. _____

c. Verify boiler senses hot water temperature below set point and control system activates boiler start. _____

d. Shut off building heating equipment to remove load on hot water system. Verify boiler shutdown sequence is initiated and accomplished after load is removed. _____

2. Verify boiler inlet/outlet pressure reading, compare to Test and Balance (TAB) Report, boiler design conditions, and boiler manufacturer's performance data.

	DESIGN	TAB	ACTUAL
Boiler inlet pressure (kPa gauge)	_____	_____	_____
Boiler outlet pressure (kPa gauge)	_____	_____	_____
Boiler flow rate (L/s)	_____	_____	_____
Flue-gas temperature at boiler outlet	_____	_____	_____
Percent carbon dioxide in flue-gas	_____	_____	_____
Draft at boiler flue-gas exit	_____	_____	_____
Draft or pressure in furnace	_____	_____	_____
Stack emission pollutants concentration	_____	_____	_____
Fuel type	_____	_____	_____
Combustion efficiency	_____	_____	_____

	DESIGN	TAB	ACTUAL
Boiler inlet pressure (psig)	_____	_____	_____
Boiler outlet pressure (psig)	_____	_____	_____
Boiler flow rate (gpm)	_____	_____	_____
Flue-gas temperature at boiler outlet	_____	_____	_____
Percent carbon dioxide in flue-gas	_____	_____	_____
Draft at boiler flue-gas exit	_____	_____	_____
Draft or pressure in furnace	_____	_____	_____
Stack emission pollutants concentration	_____	_____	_____
Fuel type	_____	_____	_____
Combustion efficiency	_____	_____	_____

3. Record the following information:

Ambient temperature	_____	degrees C
Entering hot water temperature	_____	degrees C
Leaving hot water temperature	_____	degrees C
Ambient temperature	_____	degrees F

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Ft. McCoy, WI

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Entering hot water temperature _____ degrees F
Leaving hot water temperature _____ degrees F

4. Verify temperatures in item 3 are in accordance with the reset schedule. _____

5. Verify proper operation of boiler safeties. _____

6. Unusual vibration, noise, etc. _____

7. Visually check refractory for cracks or spalling and refractory and tubes for flame impingement. _____

8. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Government Representative _____

Using Agency's Representative _____

Design Agency's Representative _____

Commissioning Agent _____

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Ft. McCoy, WI

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Functional Performance Test Checklist - Fan Coil Units

The Contracting Officer will select fan coil units to be spot-checked during the functional performance test. The number of terminals shall not exceed 10.

1. Functional Performance Test: Contractor shall demonstrate operation of selected fan coils as per specifications including the following:

a. Cooling only fan coils:

(1) Verify fan coil unit response to room temperature set point adjustment. Changes to be cooling set point to cooling set point minus 10 degrees and return to cooling set point. _____

(2) Check blower fan air flow. _____ L/s
Check blower fan air flow. _____ cfm

(3) Check cooling coil water flow. _____ L/s
Check cooling coil water flow. _____ gpm

(4) Verify proper operation of cooling water control valve. _____

b. Cooling/heating fan coils:

(1) Verify fan coil unit response to room temperature set point adjustment. Changes to be cooling set point to heating set point and return to cooling set point. _____

(2) Check blower fan air flow. _____ L/s
Check blower fan air flow. _____ cfm

(3) Check cooling coil water flow. _____ L/s
Check cooling coil water flow. _____ cfm

(4) Verify proper operation of cooling water control valve. _____

(5) Check cooling mode inlet air temperature. _____ degrees C
Check cooling mode inlet air temperature. _____ degrees F

(6) Check cooling mode outlet air temperature. _____ degrees C
Check cooling mode outlet air temperature. _____ degrees F

(7) Check heating coil water flow. _____ L/s
Check heating coil water flow. _____ gpm

(8) Verify proper operation of heating water control valve. _____

(9) Check heating mode inlet air temperature. _____ degrees C
Check heating mode inlet air temperature. _____ degrees F

(10) Check heating mode outlet air temperature. _____ degrees C
Check heating mode outlet air temperature. _____ degrees F

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

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Ft. McCoy, WI

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Contractor's Quality Control Representative

Contractor's Mechanical Representative

Contractor's Electrical Representative

Contractor's Testing, Adjusting and Balancing Representative

Contractor's Controls Representative

Government Representative

Using Agency's Representative

Design Agency's Representative

Commissioning Agent

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Ft. McCoy, WI

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Functional Performance Test Checklist - Unit Heaters

The Contracting Officer will select unit heaters to be spot-checked during the functional performance test. The number of terminals shall not exceed 10.

1. Functional Performance Test: Contractor shall demonstrate operation of selected unit heaters as per specifications including the following:

a. Verify unit heater response to room temperature set point adjustment. Changes to be heating set point to heating set point minus 10 degrees and return to heating set point. _____

b. Check blower fan speed. _____rpm

c. Check heating mode inlet air temperature. _____ degrees C Check heating mode inlet air temperature. _____ degrees F

d. Check heating mode outlet air temperature. _____ degrees C Check heating mode outlet air temperature. _____ degrees F

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Government Representative _____

Using Agency's Representative _____

Design Agency's Representative _____

Commissioning Agent _____

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Functional Performance Test Checklist - Heat Exchanger

For Converter: _____

1. Functional Performance Test: Contractor shall demonstrate operation of heat exchanger as per specifications including the following:

a. Verify proper flow. _____

b. Verify that the building controls open the valve allowing flow to the heat exchanger according the the sequence of control. _____

c. Shut off building cooling equipment to remove load on system. Verify that the valve allowing flow to the heat exchanger closes. _____

2. Verify converter inlet/outlet pressure reading, compare to converter design conditions and manufacturer's performance data.

	DESIGN	ACTUAL
Hot Side inlet water temp (degrees F)	_____	_____
Hot Side outlet water temp (degrees F)	_____	_____
Cold Side inlet water temp (degrees F)	_____	_____
Cold Side outlet water temp (degrees F)	_____	_____
Hot side inlet pressure (psig)	_____	_____
Hot Side outlet pressure (psig)	_____	_____
Hot Side Water flow rate based on pressure drop.	_____	_____
Hot Side Water flow rate based on flow measuring device.	_____	_____
Cold side inlet pressure (psig)	_____	_____
Cold Side outlet pressure (psig)	_____	_____
Cold Side Water flow rate based on pressure drop.	_____	_____
Cold Side Water flow rate based on flow measuring device.	_____	_____

3. Check and report unusual vibration, noise, etc.

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

	Signature and Date
Contractor's Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing Representative	_____
Contractor's Controls Representative	_____
Government Representative	_____

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Using Agency's Representative

Commissioning Agent

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Functional Performance Test Checklist - Computer Room Unit

For Computer Room Unit: _____

1. Functional Performance Test: Contractor shall verify operation of computer room unit as per specification including the following:

- a. System safeties allow start if safety conditions are met. _____
- b. Verify cooling and heating operation by varying thermostat set point from space set point to space set point plus 10 degrees, space set point minus 10 degrees, and returning to space set point. _____
- c. Verify humidifier operation by varying humidistat set point from space set point to space set point plus 20 percent RH, and returning to space set point. _____
- d. Verify that airflow is within +10/-0 percent of design airflow. _____
- e. Verify unit shut down during fire event initiated by smoke/heat sensors. _____

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing Representative	_____
Contractor's Controls Representative	_____
Government Representative	_____
Using Agency's Representative	_____
Design Agency's Representative	_____
Commissioning Agent	_____

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Functional Performance Test Checklist - HVAC Controls

For HVAC System: _____

The Contracting Officer will select HVAC control systems to undergo functional performance testing. The number of systems shall not exceed 10.

1. Functional Performance Test: Contractor shall verify operation of HVAC controls by performing the following tests:

a. Verify that controllers are maintaining the set points by manually measuring the controlled variables with a thermometer, sling psychrometer, inclined manometer, etc.

b. Verify sensor/controller combination by manually measuring the controlled medium. Take readings from control panel display and compare readings taken manually. Record all readings for all sensors on a separate form.

Sensor - _____
Manual measurement _____
Panel reading value _____

c. Verify system stability by changing the controller set point as follows:

- (1) Air temperature - 10 degrees F
- (2) Water temperature - 10 degrees F
- (3) Static or Differential pressure - 10 percent of set point
- (4) Relative humidity - percent (RH)
- (5) Flow - 10 percent

The control system shall be observed for 10 minutes after the change in set point. Instability or excessive hunting will be unacceptable.

d. Verify interlock with other HVAC controls.

e. Verify interlock with fire alarm control panel.

2. Verify that operation of control system conforms to that specified in the sequence of operation.

3. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative	_____
Government Representative	_____
Using Agency's Representative	_____
Design Agency's Representative	_____
Commissioning Agent	_____

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Functional Performance Test Checklist - Energy Recovery System

For Energy Recovery System: _____

1. Functional Performance Test: Contractor shall demonstrate operation of energy recovery system as per specifications including the following: Start equipment to provide energy source for recovery system.

- a. Verify energy source is providing recoverable energy. _____
- b. Verify recovery system senses available energy and activates. _____
- c. Verify that recovery system deactivates when recoverable energy is no longer available. _____

2. Verify recovery system inlet/outlet readings, compare to design conditions and manufacturer's performance data.

	Design	Actual
Primary loop inlet temp (degrees C)	_____	_____
Primary loop outlet temp (degrees F)	_____	_____
Primary loop flow rate	_____	_____
Secondary loop inlet temp (degrees)	_____	_____
Secondary loop outlet temp (degrees C)	_____	_____
Energy recovered (kJ)	_____	_____
	Design	Actual
Primary loop inlet temp (degrees F)	_____	_____
Primary loop outlet temp (degrees F)	_____	_____
Primary loop flow rate	_____	_____
Secondary loop inlet temp (degrees F)	_____	_____
Secondary loop outlet temp (degrees F)	_____	_____
Energy recovered BTU's)	_____	_____

3. Check and report unusual vibration, noise, etc.

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing , Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Government Representative _____

Using Agency's Representative

Design Agency's Representative

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Functional Performance Test Checklist - Domestic Hot Water Heater

For Water Heater: _____

1. Functional Performance Test: Contractor shall demonstrate operation of domestic hot water system as per specifications including the following:

a. Run domestic hot water at all plumbing fixtures. Determine flow rate of hot water at fixtures. Verify hot water heater burners fire to maintain hot water temperature. _____

b. Shut off domestic hot water at plumbing fixtures. Verify hot water heater burners shut off when load is satisfied.

c. Put building into unoccupied mode and verify that domestic hot water recirculating pump shuts off and hot water heater controls are disabled. _____

d. Put building into occupied mode and verify that domestic hot water recirculating pump starts and hot water heater controls are enabled.

2. Record the following information:

Entering hot water temperature	_____	degrees C
Leaving hot water temperature	_____	degrees C
Domestic hot water flow rate	_____	L/s

Entering hot water temperature	_____	degrees F
Leaving hot water temperature	_____	degrees F
Domestic hot water flow rate	_____	gpm

3. Verify capacity of water heater from data in item 2.

4. Verify proper operation of water heater safeties.

5. Unusual vibration, noise, etc.

6. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative

Government Representative

Using Agency's Representative

Design Agency's Representative

Commissioning Agent

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Functional Performance Test Checklist - Lighting System

1. Functional Performance Test: Contractor shall demonstrate operation of lighting system for 10% of sensors, devices, or spaces as applicable including the following:

a. Occupancy Sensors - Enter room to turn on lights and leave room. Record time to lights off. _____

b. Occupancy Sensors - Verify manual switch operation.

c. Night Shutoff - Verify lighting system shuts off at specified time. _____

d. Night Shutoff - Verify occupancy sensors override night shutoff. _____

e. Automatic Lighting Dimmers - Verify light dimmers increase light output from fixtures by blocking daylight from windows.

f. Automatic Lighting Dimmers - Verify light dimmers decrease light output from fixtures by allowing daylight into space. _____

2. Record illumination level in footcandles at 30 inches above the floor at 10 ft intervals for all spaces with automatic lighting dimmers.

3. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Government Representative _____

Using Agency's Representative _____

Design Agency's Representative _____

Commissioning Agent _____

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APPENDIX C

BASIS OF DESIGN

Ft. McCoy DOIM Facility
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BASIS OF DESIGN DOCUMENT FOR LEED FUNDAMENTAL COMMISSIONING

Project: Project, Location, PN #####

Approved:

Name	Design Agent's Representative	Date
------	-------------------------------	------

Instructions: Each bullet point describes information that should be inputted. Replace the explanation of the bullet point with the appropriate information. Add fields or additional spaces as necessary to provide all pertinent information to the commissioning of the building energy-related systems. Matrices may be provided to describe Primary Design Assumptions for redundant space types rather than listing per the outline.

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BASIS OF DESIGN DOCUMENT FOR LEED FUNDAMENTAL COMMISSIONING

Contents

1. Primary Design Assumptions
 - a. Climatic Design Conditions
 - b. Space Type 1
 - i. Space Use
 - ii. Redundancy
 - iii. Diversity
 - iv. Space Zoning
 - v. Occupancy
 - vi. Operations
 - vii. Space Environmental Requirements
 - c. Space Type 2
 - i. Space Use
 - ii. Redundancy
 - iii. Diversity
 - iv. Space Zoning
 - v. Occupancy
 - vi. Operations
 - vii. Space Environmental Requirements
 - d. Space Type 3
 - i. Space Use
 - ii. Redundancy
 - iii. Diversity
 - iv. Space Zoning
 - v. Occupancy
 - vi. Operations
 - vii. Space Environmental Requirements
2. Applicable Standards
3. System Narratives
 - a. HVAC&R Systems
 - i. System 1
 - ii. System 2
 - iii. System 3
 - b. Lighting Systems
 - i. System 1
 - ii. System 2
 - iii. System 3
 - c. Domestic Hot Water Systems
 - i. System 1
 - ii. System 2
 - iii. System 3
 - d. On-site Power Systems
 - i. System 1
 - ii. System 2
 - iii. System 3
 - e. Other Systems
 - i. System 1
 - ii. System 2
 - iii. System 3

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1. Primary Design Assumptions

a. Climatic Design Conditions

Identify Source of Design Condition Data. (Example: Design Criteria Data is obtained from the Air Force Combat Climatology Center in accordance with UFC 3-400-02, Design: Engineering Weather Data.)

Location Information. (Example: Ft. Drum, NY; Latitude 44.05 N, Longitude 75.73 W, Elevation 679 ft)

Summer Hot Design Condition
(Example: 1.0% Dry Bulb Temperature Occurrence
84 deg F / 70 deg F mean coincident wet bulb temperature)

Winter Design Condition
(Example: 99.6% Dry Bulb Temperature Occurrence
-11 deg F/ -11 deg F mean coincident wet bulb temperature)

Summer Humid Design Condition
(Example: 1.0% Wet Bulb Temperature Occurrence
73 deg F/ 79 deg F mean coincident dry bulb temperature)

Cooling and Heating Degree Days and Base Temperature
(Example: Cooling Degree Days 584
Heating Degree Days 6901 Base 65 deg F)

b. Space Type 1

Space Use: Explain how the space(s) will be used (Example: Classroom occasionally used as conference room).

Redundancy: Identify whether and why the systems serving the space(s) require redundancy. (Example: Systems serving spaces will use hydronic heating system with two boilers minimum.)

Diversity: Identify whether and why diversity may be applied to the determination of block cooling/heating loads, ventilation rates, lighting, electrical circuit capacity, etc. (Example: Applied population diversity to ventilation system in accordance with ASHRAE 62.1-2004. Applied diversity to VAV system by setting airflow at value needed to satisfy total block load.)

Space Zoning: Describe how spaces will be zoned. (Example: No more than 3 private offices will be grouped together on one VAV box and thermostat. Commander offices will have its own VAV box and thermostat.) (Example: External open office spaces will be separately zoned from interior open office spaces.) (Example: Each office is its own zone.)

Occupancy: Describe the occupancy including number of people at various times (i.e. drill weekend-maximum capacity, weekdays-20%; or 0700-0900 - none, 0900-1400 - 30 people, 1400-1600 - none; 1 person per 100 sqft.).

Operations: Describe how space(s) are operated. (Example: Building is operated 24 hrs 7 days a week; Building systems are controlled from DDC

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system to switch modes based on occupancy schedule or sensor input.)
(Example: The classroom is used occasionally as a conference room.)

Space Environmental Requirements: Describe the environmental requirements of the space(s). Include description of temperatures, humidity levels, ventilation rates, air quality, lighting levels, or any other specific parameters (i.e. 75 deg F, 50% rh, 30 fc, etc.).

c. Space Type 2

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2. Applicable Standards

List standards, codes, design guides, and other references used for the design and installation of the building energy systems.

(Example:

ASHRAE Standard 90.1-2004 Energy Standard for Buildings Except Low-Rise Residential

ASHRAE Standard 62.1-2004 Ventilation for Acceptable Indoor Air Quality

ASHRAE Standard 52.2-1999 Method of Testing General Ventilation

Air-Cleaning Devices for Removal Efficiency by Particle Size

LEED-NC Green Building Rating System for New Construction & Major Renovations v2.2

LEED for New Construction & Major Renovation v 2.2 Reference Guide

International Mechanical Code

International Plumbing Code

NFPA 54 National Fuel Gas Code

NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems

NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems

UFC 4-171-05 Design: Guide for Army Reserve Facilities

UFC 3-400-01 Energy Conservation

UFC 3-400-02 Design: Engineering Weather Data

UFC 3-410-01 Heating, Ventilating, and Air Conditioning)

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3. System Narratives

a. HVAC&R Systems

- i. System 1 (Examples: Office Area VAV Air Distribution System, Hydronic Heating System, Geothermal Systems, Control Systems, Unit Heating)

Insert narrative of system.

- ii. System 2

Insert narrative of system.

b. Lighting Systems

- i. System 1 (Examples: High-efficiency fluorescent lamps with high-efficiency ballasts. A daylight harvesting system with automatic dimming of the fluorescent fixtures based on the amount of natural sunlight in the area will be specified in the open office areas.)

Insert narrative of system.

- ii. System 2

Insert narrative of system.

c. Domestic Hot Water Systems

- i. System 1 (Examples: Gas-fire Water Heater with External Storage Tank, Recirculation Loop, Instantaneous Electric Water Heaters)

Insert narrative of system.

- ii. System 2

Insert narrative of system.

d. On-site Power Systems

- i. System 1 (Examples: Hydro-power Units, etc.)

Insert narrative of system.

- ii. System 2

Insert narrative of system.

e. Other Systems

- i. System 1

Insert narrative of system.

- ii. System 2

Insert narrative of system.

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APPENDIX D

OWNER'S PROJECT REQUIREMENTS

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OWNER'S PROJECT REQUIREMENTS DOCUMENT FOR LEED FUNDAMENTAL COMMISSIONING

Project: Project, Location, PN #####

Approved:

Name	Design Agent's Representative	Date
------	-------------------------------	------

Name	Owner's Representative	Date
------	------------------------	------

Instructions: Each bullet point describes information that should be inputted. Replace the explanation of the bullet point with the appropriate information. Add fields or additional spaces as necessary to provide all pertinent information to the commissioning of the building energy-related systems. Matrices may be provided to describe Indoor Environmental Quality Requirements rather than listing per the outline.

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OWNER'S PROJECT REQUIREMENTS DOCUMENT FOR LEED FUNDAMENTAL COMMISSIONING

Contents

1. Owner and User Requirements
 - a. Primary Purpose, Program, and Use
 - b. Project History
 - c. Broad Goals
 - i. Future Expansion
 - ii. Flexibility
 - iii. Quality of Materials
 - iv. Construction Costs
 - v. Operational Costs
2. Environmental and Sustainability Goals
 - a. LEED Goal
 - b. Other
3. Energy Efficiency Goals
 - a. Compliance with Energy Policy Act of 2005
 - b. Envelope or Site Feature Energy Impact
4. Indoor Environmental Quality Requirements
 - a. Space Type 1
 - i. Intended Use
 - ii. Occupancy Schedule
 - iii. Environmental Requirements
 - iv. Occupant System Control Ability
 - v. Type of Lighting
 - vi. After-hour Use Accommodation
 - b. Space Type 2
 - i. Intended Use
 - ii. Occupancy Schedule
 - iii. Environmental Requirements
 - iv. Occupant System Control Ability
 - v. Type of Lighting
 - vi. After-hour Use Accommodation
5. Equipment and System Expectations
 - a. HVAC Systems
 - i. Quality and Reliability
 - ii. Type
 - iii. Automation
 - iv. Flexibility
 - v. Maintenance Requirements
 - b. Lighting Systems
 - i. Quality and Reliability
 - ii. Type
 - iii. Automation
 - iv. Flexibility
 - v. Maintenance Requirements
 - c. Domestic Hot Water Systems
 - i. Quality and Reliability
 - ii. Type
 - iii. Automation
 - iv. Flexibility
 - v. Maintenance Requirements

Contents (continued)

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- d. On-site Power Systems
 - i. Quality and Reliability
 - ii. Type
 - iii. Automation
 - iv. Flexibility
 - v. Maintenance Requirements
- e. Other Systems
 - i. Quality and Reliability
 - ii. Type
 - iii. Automation
 - iv. Flexibility
 - v. Maintenance Requirements
- 6. Building Occupant and O&M Personnel Requirements
 - a. Facility Operation
 - b. UMCS (EMCS or FMCS)
 - c. Occupant Training and Orientation
 - d. O&M Staff Training and Orientation

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1. Owner and User Requirements

a. Primary Purpose, Program, and Use

Explain the purpose, program, and use of the facility. (i.e. Army Reserve Center used for training reserve units. Training includes weapons, medical, vehicle repair, cooking, etc.)

b. Project History

Explain the history of the project related to design/construction (i.e. D/B/B, D/B, IDIQ, JOC, COE in-house, A/E, etc.). Explain any additional project background that would impact energy/sustainability goals.

c. Broad Goals

- i. Future Expansion: Explain goals related to potential future expansion.
- ii. Flexibility: Explain goals related to flexibility for layout and use of the building. (i.e. high rate of office churn, expected frequency of renovation, etc.)
- iii. Quality of Materials: Explain goals related to quality of materials. (i.e. highest quality materials, 50 yr life, 25 yr life, highest quality within budget, etc.)
- iv. Construction Costs: Explain goals related to construction costs. (i.e. how low can you go, set project amount, select simplest systems for low cost, etc.)
- v. Operational Costs: Explain goals related to operational costs. (i.e. low utilities based on water and energy conservation, trade-off allowable on maintenance costs to reduce utility cost, utility cost unimportant compared to construction cost, etc.)

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2. Environmental and Sustainability Goals

a. LEED Goal

Set LEED goal and explain sustainable features permissible or preferred to be incorporated. Explain relative importance of LEED goal within project scope.

Set LEED goal. Indicate requirement by Army Sustained Design and Development Policy.

b. Other

Explain any special sustainability or environmental goals associated with the project. Identify specific sustainability features that may be required or desired. (i.e. hydro-power, solar power, on-site water treatment, on-site water infiltration, impervious cover reduction, parking capacity, etc.)

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3. Energy Efficiency Goals

a. Compliance with the Energy Policy Act of 2005

It is mandatory that all federal buildings designed after January 2007 meet the requirements of the Energy Policy Act of 2005. This act requires that the building energy consumption level be reduced by 30% compared to the baseline building performance per ASHRAE Standard 90.1-2004, Appendix G if Life Cycle Cost Effective. If 30% reduction is not life-cycle cost effective, the most energy efficient design that is life cycle cost effective must be evaluated. Federal agencies are required to specify FEMP-designated or ENERGY STAR equipment, including building mechanical and lighting equipment and builder-supplied appliances.

b. Envelope or Site Feature Energy Impact

Identify and explain envelope or site features that will be incorporated to maximize energy efficiency. Identify features that must be incorporated that will reduce or limit energy efficiency.

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4. Indoor Environmental Quality Requirements

a. Space Type 1

- i. Intended Use: Explain how the space will be used (i.e. classroom occasionally used as conference room).
- ii. Occupancy Schedule: Describe the occupancy including number of people at various times (i.e. drill weekend-maximum capacity, weekdays-20%; or 0700-0900 - none, 0900-1400 - 30 people, 1400-1600 - none).
- iii. Environmental Requirements: Describe the environmental requirements of the space. Include description of temperatures, humidity levels, ventilation rates, air quality, lighting levels, or any other specific parameters desired (i.e. 75 deg F, 50% rh, 30 fc, etc.).
- iv. Occupant System Control Ability: Describe the desired level of control the occupants will have over the thermal comfort and lighting systems. (i.e. adjustable thermostat for every person, adjustable thermostat in all private offices, no adjustable thermostats, adjustable thermostat in senior rank also controlling other offices, occupancy sensors for lighting, adjustable dimming, etc.)
- v. Type of Lighting: Describe the type of lighting desired (i.e. task lighting with minimal overhead, maximize daylight with dimming on overhead, accent lighting, particular fixtures, etc.).
- vi. After-hour Use Accommodations: Describe whether and how often the space may be used after hours. Describe the systems that activate when an occupant uses the building after-hours. Describe the level of control of after-hour use HVAC. (Example: Space is rarely used after-hours by few occupants. HVAC and lighting system should activate. The HVAC operation will be limited to that required to provide heating, A/C, and ventilation to the occupied space alone.) (Example: Space is rarely used after-hours by few occupants. Lighting and heating systems should activate. Ventilation and cooling should remain in normal after-hour operation.)

b. Space Type 2

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5. Equipment and System Expectations

a. HVAC Systems

- i. Quality and Reliability: Explain the level of quality and reliability required of the HVAC systems. (Example: Equipment efficiency should meet ASHRAE and EPACT requirements. Due to critical nature of facility, additional redundancy in the cooling and heating systems is required, i.e. multiple chillers, boilers, and pumps.) (Example: No specific quality or reliability requirements specified. Equipment should remain serviceable over life of building or to the extent typical of the type of equipment.)
- ii. Type: Explain the type of equipment desired. (Example: Boilers and water heaters should be XXXX manufacturer. Boilers should be condensing type. Use hydronic heating and cooling. Use self-contained A/C units in computer rooms.)
- iii. Automation: Explain the level of automation in the HVAC System desired. (Example: Single loop HVAC systems permissible. Use packaged controls only.) (Example: Control HVAC systems from DDC system connected to the base UMCS.) (Example: Boilers should have packaged controls connected to the DDC system.)
- iv. Flexibility: Describe the desired level of flexibility of the HVAC system. (Example: System should accommodate frequent office layout changes including private office wall movement.) (Example: Layout will remain mostly unchanged; no flexibility required.) (Example: Accommodate potential for conference and classrooms to change to offices.)
- v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the equipment regarding maintainability. (Example: Equipment should be located to allow easy maintenance access. Equipment vendors or repair service should be able to respond within 24 hrs.)

b. Lighting Systems

- i. Quality and Reliability: Explain the level of quality and reliability required of the lighting system controls. (Example: The building lighting system should meet ASHRAE/IESNA Standard 90.1 requirements.)
- ii. Type: Explain the type of lighting or control equipment desired. (Example: High-efficiency fluorescent lamps with high-efficiency ballasts will be specified. Indirect lighting will be used in all office and classroom spaces. Foot-candle levels may be reduced to 45 in lieu of the typical 50 foot-candles when indirect lighting is used.)
- iii. Automation: Explain the level of automation in the lighting control system desired. (Example: Provide occupancy sensors in restrooms, corridors, and storage areas.)
- iv. Flexibility: Describe the desired level of flexibility of the lighting system and control systems. (Example: Provide dual level switching in classrooms and conference rooms.)
- v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the equipment regarding maintainability. (Example:)

c. Domestic Hot Water Systems

- i. Quality and Reliability: Explain the level of quality and reliability required of the domestic hot water systems. (Example:

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- Equipment efficiency should meet ASHRAE and EPACT requirements. Due to critical nature of facility, additional redundancy in the water heating systems is required, i.e. multiple hot water heaters and circulation pumps.) (Example: No specific quality or reliability requirements specified. Equipment should remain serviceable over life of building or to the extent typical of the type of equipment.)
- ii. Type: Explain the type of equipment desired. (Example: Gas-fired storage tank water heater with mixing valve for temperature control.) (Example: Instantaneous electric water heater at lavatories.) (Example: Instantaneous electric water heater with integral control system for eyewash/showers.)
 - iii. Automation: Explain the level of automation in the domestic hot water control system desired. (Example: Occupancy schedule control for recirculation loop and gas burner. Connect package controls to DDC system.)
 - iv. Flexibility: Describe the desired level of flexibility of the domestic hot water systems. (Example: No anticipated changes to restroom layout; no additional flexibility required.)
 - v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the equipment regarding maintainability. (Example: Equipment should be located to allow easy maintenance access. Equipment vendors or repair service should be able to respond within 24 hrs.)

d. On-site Power Systems

- i. Quality and Reliability: Explain the level of quality and reliability required of the on-site power system.
- ii. Type: Explain the type of on-site power system desired.
- iii. Automation: Explain the level of automation in the on-site power system desired.
- iv. Flexibility: Describe the desired level of flexibility of the on-site power system.
- v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the on-site power system regarding maintainability.

e. Other Systems

- i. Quality and Reliability: Explain the level of quality and reliability required of the system.
- ii. Type: Explain the type of system desired.
- iii. Automation: Explain the level of automation in the system desired.
- iv. Flexibility: Describe the desired level of flexibility of the system.
- v. Maintenance Requirements: Describe the level of maintenance available or the requirements of the system regarding maintainability.

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6. Building Occupant and O&M Personnel Requirements

a. Facility Operation

Describe how the facility will be operated. Who operates the facility? Who maintains the facility? Who pays the utility bills?

b. UMCS (EMCS or FMCS)

Will the building be tied to an EMCS? What system will be connected to? Provide information regarding connection requirements, protocols, and control, scheduling and monitoring points.

c. Occupant Training and Orientation

How much training and orientation is desired for building occupants? Will training need to be provided for all systems? To what extent do the occupants need to understand and use the systems?

d. O&M Staff Training and Orientation

How much training and orientation is desired for building occupants? Will training need to be provided for all systems? To what extent do the occupants need to understand and use the systems?

-- End of Section --

Appendix GG

Army Reserve Energy Initiatives

FY 09/10 where projects are awarded – Investigate contract modifications for the following energy options,

- Waterless urinals – Replacing water consuming urinals in awarded contracts with waterless urinals should be easy to achieve with a modification. The only caveat is, it is highly preferred to have a water consuming device (waterclosets or sink) upstream of the urinal to wash down the pipe and help clear out any solids that may precipitate out.
- Low flow plumbing fixtures – Installing fixtures that consume less water should be accomplished. All public lavatories should already be 0.5 gallons per minute (gpm) or reduced to this level. Waterclosets/toilets can be reduced to 1.28 gallons per flush (gpf) or have a dual flush capability (1.6 gpf for solids/1.0 gpf for liquids). Showers at 2.5 gpm could be reduced based on user preferences 2.2 gpm seems reasonable for daily washing and 1.5 gpm could be acceptable in a Center where a quick rinse/shower is the norm.
- Sensors on bathroom water faucets – Installing sensors on bathroom faucets could be accomplished. However it must be decided if these are to be wired or battery powered. Wired is the preferred method since it eliminates part of the maintenance tail.
- Induction/LED exterior lighting – these lighting fixtures are more expensive than what has typically been installed but will reduce energy usage. LEDs are preferred due to a warm-up time for induction lighting in cold weather. Induction lighting is better suited for use in high-bay areas than exterior.
- LED exterior lighting on light poles with solar panels - this change could be made, consideration should be given to the possibility of keeping some of the light poles wired to provide some lighting if there is a failure in the battery/panel system. Need to have the type of solar LED light that will allow for dual power supply. Availability for this type may be limited.
- Higher efficiency ductwork – the only change that could be made here is to increase the seal class of the duct to prevent leakage. Adding insulation or enlarging the ductwork is impractical for awarded contracts.
- Windows - better U value/E coating – Replacing these with windows of the U value and solar heat gain coefficient (SHGC) listed in the CERL energy study would improve energy loss and should not require redesign of the HVAC system. See table below for recommended minimum values.
- Doors - better U value - Increase the U-value to the maximum extent practical.

- Occupancy sensors for interior room lighting – This should be done. However, care must be taken in classrooms to have a manual override switch such that lights can be manually shut-off.
- Added wall/roof insulation – Changing the wall and roof insulation values at this point would have too great of an effect on the exterior HVAC zones and could require a redesign effort. Values should already be comparable to the values listed in the table below. These values should be considered minimum.
- Radiant heating in maintenance bays – this should already be being accomplished as it is standard practice among our designers. Changing at this juncture may not be possible due to design costs and the amount of equipment in the ceiling.
- Solar tubes (daylighting) – This should be avoided on awarded contracts. When these are installed there must be emphasis on flashing to provide weather tight seals. This issue is also being coordinated with AR roofing standards to determine the most appropriate use with the least impact to the roof. More guidance to come.
- Photovoltaic panels on the roof – This should be avoided on awarded contracts. This issue is being coordinated with AR roofing standards to determine the most appropriate use with the least impact to the roof. More guidance to come.

FY 09/10 where projects are designed but not awarded: Consider as bid options or redesigns:

- Waterless urinals - Replacing water consuming urinals in projects not yet awarded contracts with waterless urinals should be easy to achieve with a modification. The only caveat is, it is highly preferred to have a water consuming device (waterclosets or sink) upstream of the urinal to wash down the pipe and help clear out any solids that may precipitate out.
- Low flow plumbing fixtures – Installing fixtures that consume less water should be accomplished. All public lavatories should already be 0.5 gallons per minute (gpm) or reduced to this level. Waterclosets/toilets can be reduced to 1.28 gallons per flush (gpf) or have a dual flush capability (1.6 gpf for solids/1.0 gpf for liquids). Showers at 2.5 gpm could be reduced based on user preferences 2.2 gpm seems reasonable for daily washing and 1.5 gpm could be acceptable in a Center where a quick rinse/shower is the norm.
- Sensors on bathroom water faucets – Installing sensors on bathroom faucets could be accomplished. However it must be decided if these are to be wired or battery powered. Wired is the preferred method since it eliminates part of the maintenance tail.

- Induction/LED exterior lighting – these lighting fixtures are more expensive than what has typically been installed but will reduce energy usage. LEDs are preferred due to a warm-up time for induction lighting in cold weather and that induction lighting is more suited for use in high-bay areas.
- Induction/LED exterior lighting on light poles with solar panels - this change could be made, consideration should be given to the possibility of keeping some of the light poles wired to provide some lighting if there is a failure in the battery/panel system. Need to have the type of solar LED light that will allow for dual power supply. Availability for this type may be limited.
- Higher efficiency ductwork – Unless major redesign effort can be expended the only change that could be made here is to increase the seal class of the duct to prevent leakage. Adding insulation may also be possible but usually cannot be accomplished because the height of the ductwork is usually maximized to just fit above the ceiling.
- Windows - better U value/E coating - Replacing these with windows of the U value and solar heat gain coefficient (SHGC) listed in the CERL energy study would improve energy loss and should not require redesign of the HVAC system. See table below for minimum values.
- Doors - better U value - Increase the U-value to the maximum extent practical.
- Occupancy sensors for interior room lighting - This should be done. However, care must be taken in classrooms to have a manual override switch such that lights can be manually shut-off.
- Added wall/roof insulation - Changing the wall and roof insulation values at this point could have too great of an affect on the exterior HVAC zones and could require a redesign effort. Values should already be comparable to the values listed in the table below. These values should be considered minimum.
- Radiant heating in maintenance bays – this should already be the standard.
- Solar tubes (daylighting) – This issue is being coordinated with AR roofing standards to determine the most appropriate use with the least impact to the roof. More guidance to come.
- Photovoltaic panels on the roof – This issue is being coordinated with AR roofing standards to determine the most appropriate use with the least impact to the roof. More guidance to come.

FY 10/11 where projects are still in design add the following into the designs (be prepared to option some items if $CWE > PA$):

- E-W building orientation, if possible on the site while maintaining AT/FP
- Infiltration tighter than .25 cfm/SF at 75 PA – This should be designed into the buildings and is already incorporated into Specification Section 07 25 00.00 06.
- Added wall/roof insulation – the minimum R values for insulation should be per the table below.
- Windows - better U value/E coating - the minimum U/SHGC values for should be per the table below.
- Lighting - low power density & occupancy sensors
- Maximum use of ambient, natural light in design – This should be done
- Solar tubes (daylighting) – This issue is being coordinated with AR roofing standards to determine the most appropriate use with the least impact to the roof. More guidance to come.
- Waterless urinals – This is mandated by Army policy and is being implemented.
- Low flow plumbing fixtures – All lavatories should be 0.5 gpm. Waterclosets should be 1.28 gpf. Showers at 2.5 gpm could be reduced based on user preferences 2.2 gpm seems reasonable for daily washing and 1.5 gpm could be acceptable in a Center were a quick rinse/shower is the norm.
- Sensors on bathroom water faucets – Sensors should be installed on restroom faucets and should be wired.
- Induction/LED exterior lighting – use this type of lighting for exterior lighting. Induction lighting should be avoided in colder climates due to warm up period.
- Induction/LED exterior lighting on light poles with solar panels - this change could be made, consideration should be given to the possibility of keeping some of the light poles wired to provide some lighting if there is a failure in the battery/panel system. Need to have the type of solar LED light that will allow for dual power supply. Availability for this type may be limited.
- Higher efficiency ductwork – larger ductwork/AHUs should be used to reduce the velocity through the system thus reducing fan motor size. Using ductwork that is more square/round, increasing the seal class and more insulation should also be investigated.
- Doors - better U value – Increase the U-value to the maximum extent practical.
- Radiant heat in maintenance bays – this should be the standard

- Photovoltaic panels on the roof –This issue is also being coordinated with AR roofing standards to determine the most appropriate use with the least impact to the roof.

Table: Envelope Energy Conservation Measures

Climate Zone	Wall Ins. ft ² hF/Btu	Attic Roof Ins. ft ² hF/Btu	Flat Roof Roof Ins. ft ² hF/Btu	Roof Reflec- tance	Slab Ins. (unheated) ft ² hF/Btu	Window (U-Btu/ft ² hF : SHGC)			
						N	E	S	W
1A	15	30	15 ci	0.65	NR	0.56 0.35	0.56 0.35	0.56 0.35	0.56 0.35
2A & B	15	38	15 ci	0.65	NR	0.45 0.31	0.45 0.31	0.45 0.31	0.45 0.31
3A & B	13 + 3.8 ci	38	20 ci	0.65	NR	0.45 0.31	0.45 0.31	0.45 0.31	0.45 0.31
3C	13 + 3.8 ci	38	20 ci	0.3	NR	0.45 0.31	0.45 0.31	0.45 0.31	0.45 0.31
4A & B	13 + 7.5 ci	38	20 ci	0.3	NR	0.42 0.46	0.42 0.46	0.42 0.46	0.42 0.46
4C	13 + 7.5 ci	38	20 ci	0.3	NR	0.42 0.46	0.42 0.46	0.42 0.46	0.42 0.46
5A & B	13 + 7.5 ci	38	20 ci	0.3	NR	0.42 0.46	0.42 0.46	0.42 0.46	0.42 0.46
6A & B	13 + 7.5 ci	38	20 ci	0.3	NR	0.42 0.46	0.42 0.46	0.42 0.46	0.42 0.46
7A	13 + 13 ci	60	20 ci	0.3	NR	0.33 NR	0.33 NR	0.33 NR	0.33 NR
8A	13 + 21.6 ci	60	30 ci	0.3	10 – 24 in	0.33 NR	0.33 NR	0.33 NR	0.33 NR